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The NEW ZEALAND JOURNAL OF AGRICULTURE

Vol. 63 WELLINGTON, AUGUST 15, 1941. No. 2

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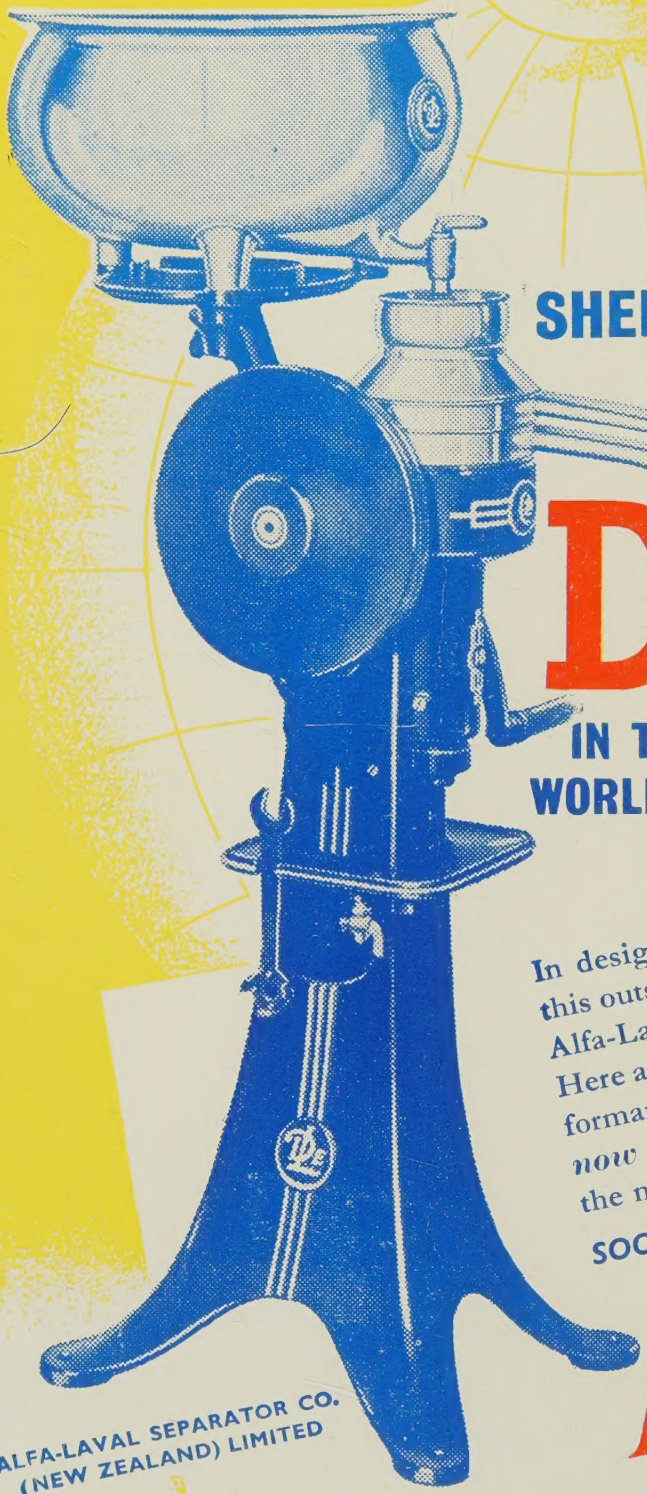

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THE NEW ZEALAND
JOURNAL OF AGRICULTURE

Vol. 63. No. 2.
August 15, 1941.
Wellington.

Published by direction of Hon. J. G. Barclay, Minister of Agriculture.

With the change-over from butter to cheese production, the question of using whey in the place of skim-milk for the raising of calves on the dairy farm is of considerable importance. Farmers who have been supplying cheese factories in past seasons will be fully conversant with the use of whey in calf feeding, but to those who are changing over this season and who have formerly been accustomed to the use of skim-milk, the following notes will be of interest.

REARING CALVES ON WHEY

Contributed by the
LIVESTOCK DIVISION

THERE is a general tendency to look upon whey with disfavour, but this need not be so if a little extra care is exercised in using it. Both skim-milk and whey are described as bulky or watery concentrates, in that the dry-matter content per gallon is low. The proteins and mineral-matter contained in each are of high feeding value so far as the rearing of young stock is concerned. On a general basis, it is considered that whey possesses more than half the feeding value of skim-milk. If a suitable dry concentrate is added to the whey ration the feeding value of the latter may be brought up to equal that of skim-milk. This is the practice generally followed, and is one to be recommended. Any attempt to make up any deficiency in whey through the provision of excess quantities is definitely harmful in the case of young animals. Indigestion, scours, bloating, distended abdomen, and pot-bellies are frequently seen when calves are fed excessive quantities.

Start of Feeding

The same general principles of feeding apply to calves being reared on whey, and it is even more important in this case that all new-born calves should be given the first milk, or colostrum. This first secretion is unsuitable for the factory, and supplies a very real need for the calf at birth. The colostral milk is laxative and protective in its action on the alimentary canal of the young calf. It initiates and stimulates the digestive processes, and removes the solid matter in the bowel at birth. Calves which are given the colostral milk are much less susceptible to infection by harmful bacteria causing scours.

Once this object has been achieved, either by leaving the calf to suckle the dam for a day or two or by milking out the cow and feeding the first milk to the calf in a bucket, the calf is carried on a ration of whole-milk for a number of days. This time varies on many farms, but it is important to give whole-milk for at least two weeks. The change-over to whey may be brought about in the third or fourth week when the whole-milk is being gradually replaced by the whey. The change-over should take at least 10 days, substituting whey for whole-milk at the rate of 1 lb. per day. One of the most commonly used supplements to bring up the feeding value of whey is meat-meal. As the whey replaces the whole-milk a small ration of meat-meal is gradually added.

Amounts Fed

The following table sets out clearly the amounts of whole-milk, whey, and meat-meal fed to calves at different ages. As already stated, however, a few extra days on whole-milk in the case of whey-reared calves will ensure a firm foundation on which to build.

MOOSE makes up the lee-whey!

WHEY alone is not enough . . .
WHEY plus MOOSE is a Perfectly Balanced Calf Food

SKIM MILK CALVES

Moose replaces the fat lacking in skim. The additional nourishment supplied by Moose builds extra stamina and vitality.

WHEY supplies valuable milk minerals and lactose for calves, but lacks fats and proteins so necessary to the rearing of a healthy and productive future herd. When you add MOOSE to whey you add these vital factors that make a COMPLETE and NATURAL CALF FOOD.
Build health and stamina now for fewer replacements in the future herd.

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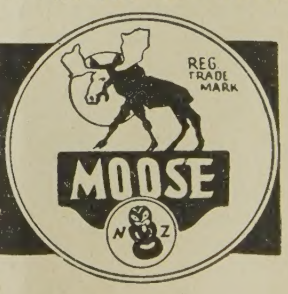


Write W. & R. Fletcher (N.Z.) Ltd., P.O. Box 663, Wellington, for latest Information on Calf Feeding.

Age of Calf (days)	Whole-milk (pints)	Whey (pints)	Meat-meal (oz.)
2	2¼	0	0
4	2¾	0	0
6	3	0	0
8	3¼	0	0
10	3	¾	½
12	3	1½	¾
14	2¼	3	1½
16	1½	4	2¼
18	¾	5	2½
20	—	6	3
22	—	6½	3½
24	—	7½	4
26	—	9	4
28	—	9	4
30	—	9	4
Weeks			
5	—	10	5
6	—	10	5
8	—	10	5
9	—	10	5
10	—	12	6
11	—	12	6
12	—	10	5

The above amounts are calculated as per feed, and such feeds are usually given twice daily. This is considered reasonable for the smaller breeds, Jerseys and Ayrshires; calves of the larger breeds, such as Holsteins, are given more, calculated on the basis of an allowance of 1 lb. of milk per 10 lb. of liveweight.

A salt mixture consisting of equal parts of slaked lime and ordinary salt added to the whey gives good results when fed at the rate of half a teaspoonful per feed for the first three weeks, gradually increasing to two teaspoonfuls per feed at five weeks.

Regular Feeding Important

In the rearing of calves on whey the same strict attention must be paid to cleanliness and regularity of feeding. Dirty whey-containers and buckets should be avoided, as they are frequently laden with germs and are a potent cause of scours. Regular feeding times must be observed, and overfeeding with whey should be always very carefully checked. The surroundings should be clean and wholesome, and the importance of freedom on a clean, leafy pasture need not be stressed.

If an owner desires to use a supplement other than meat-meal, quite good results are obtained through the addition of linseed. In the young calf this is best supplied as linseed jelly. This is prepared by boiling 1 lb. of linseed in one gallon of water until the seed coats have burst and a jelly is formed. A tablespoonful of the jelly may be added to each feed of the young calf, gradually increasing to half a pint each feed.

As the calves become older the use of a grain ration will hasten the growth and development of any backward or stunted calves. If, however, the calves have free access to good, clean, clover pasture, grain feeding, except for show purposes, should not be necessary.

Radio Broadcasts.

RADIO broadcasts to farmers will be given from 1YA Auckland, at 7.15 p.m. on the following dates:—

September 1.—"Lecture in Connection With Livestock": By a member of the Livestock Division.

September 8.—"Maize Growing in the Bay of Plenty": Mr. C. R. Taylor, Instructor in Agriculture, Whakatane.

September 15.—"Re-working of Fruit Trees": Mr. A. T. Douglas, Orchard Instructor, Auckland.

September 22.—Young Farmers' Club Notes: Secretary of the Auckland Council.

Pig Industry Broadcasts

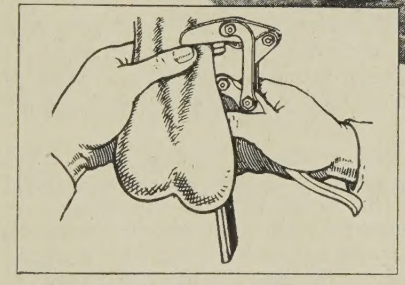
The following programme of radio broadcasts will be given under the auspices of the National Pig Industry Council:—

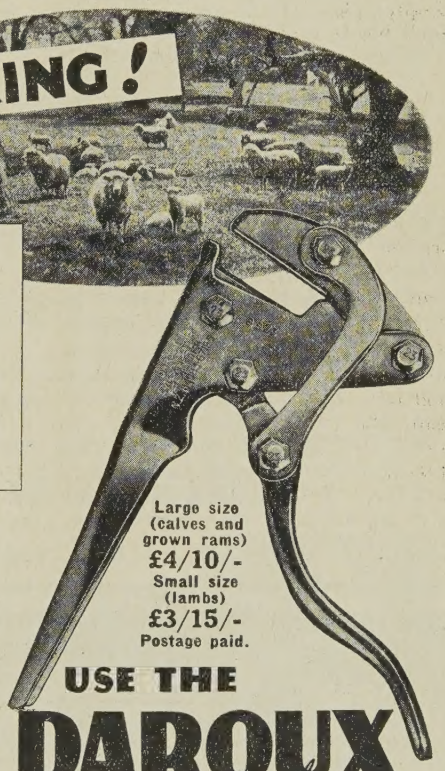
1YA. — September 18, 7.15 p.m.—"Foods and Feeding," by Mr. A. Longwill, Auckland District Pig Council.

2YA.—September 9, 7.15 p.m.—"Organisation of Pig Clubs and District Pig Councils, with reference to the 2d. per pig levy," by Mr. C. H. M. Sorenson, Taranaki District Pig Council.

3YA.—September 18, 7.15 p.m.—Subject not decided. H. W. McIntosh, Canterbury District Pig Council.

LAMB MARKING!





You Can't Reasonably Continue Using the Knife to Your Disadvantage!

Striking results are quoted in the Scottish Journal of Agriculture of an experiment with the two methods of castrating lambs—the knife and the bloodless castrator.

Ten pairs of twin half-bred male lambs were taken from a flock of Cheviot ewes. One twin was castrated with the castrator, the other with the knife. The live weight gain between castration and weaning was recorded for each lamb, and the gain made by one lamb castrated with the castrator compared with that of its brother castrated with the knife.

IN EVERY CASE, THE BLOODLESSLY CASTRATED LAMB MADE MORE RAPID GAINS, THE AVERAGE INCREASE BEING 59 lb., AS AGAINST AN AVERAGE OF 53 lb. FOR THOSE CUT WITH THE KNIFE, AN ADVANTAGE OF 6 lb. PER HEAD.

Seven single lambs castrated with the castrator averaged 64 lb. increase between castration and weaning, compared with an average of 58 lb. for seven cut with the knife, again an advantage of 6lb. per head. In addition to yielding a heavier lamb, the bloodless castrator gave a bigger lamb with bolder head and stronger bone, and in better condition.

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THE Director-General's PAGE

Seed Certification Services Withdrawn

AS the result of an investigation by officers of the Fields Division, all certification services in respect of all seed handled by Messrs. Langleys, Hastings, have been withdrawn by the Department of Agriculture.

Accordingly, Messrs. Langleys have been advised that no officer of the Department will be available for the supervision of the machine dressing, sealing and tagging of seed in their stores, that no application by them for field services will be accepted, and that the Department is not prepared to supply this firm with certified Government stock seeds, or any other seed available for sale by the Department.

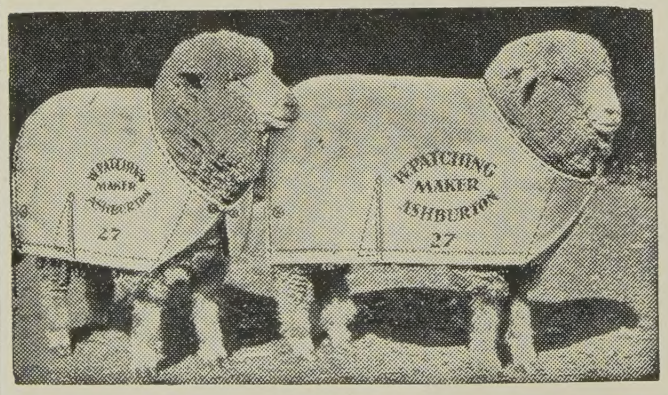
Proof That Wool Classing Pays

BEFORE the outbreak of war and the introduction of the wool appraisement scheme, or the "Commandeer" as it was more popularly known, farmers frequently argued that wool classing was not a paying proposition. In isolated instances they were right, but in general and over a period they were definitely wrong, for classing did pay—and still does. The line of argument generally adopted was that farmer "A" who **did not** class got just as good a price, or a better price, for his wool than "B," his neighbour, with similar sheep and wool, who went to the expense of classing. There is a fallacy in the argument, but many of those who propound it either cannot or will not see it.

One of the first points to be taken into account is the question of the yield of the wool—that is, the amount of clean scoured wool left after all impurities have been removed. A difference of 5 per cent. or 6 per cent. in yield would be quite imperceptible to the average farmer, yet it would make a difference of nearly 2d per lb. to the price he received for it. Apart from yield, there are many other points which would affect the value of the two clips which might easily be overloked by the layman, for example, differences in length, count, soundness, colour, and handle. Moreover, in pre-war times direct comparisons were valid only when the two clips were sold at the same sale—preferably about the same time—because of the notorious fluctuations of the market.

Today all these conditions, except the last, still hold good, and another, the most convincing argument of all in favour of classing, has always been valid—today more so than ever. It is a fact that wool dealers can make a living by buying poorly-classed or unclassed clips, and after carefully re-classing them on their own premises they are able to dispose of them at a profit.

Before the war, dealers operated both at the auction sales and in the country, buying direct from the farmer. Today, there are no longer



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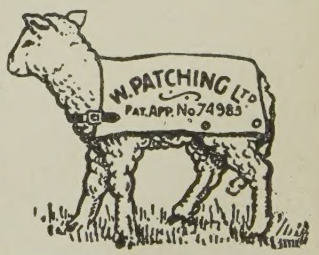

wool auction sales, as all the wool is bought on behalf of the British Government on a fixed scale of values, but licensed wool dealers still can, and do, buy direct from the farmer. It is stated that some of them who specialise in the business are actually able to offer the farmer a better price than he would receive by offering his wool for appraisal in the ordinary way.

This seeming anomaly is explained by the old argument that CLASSING PAYS. Many farmers are still content to send in their clips for sale without adequate preparation—sometimes without even attempting to remove bellies and skirtings. A clip of this sort meets its just deserts, and is penalised by the appraisers when it is valued. On the other hand, the wool dealer, operating in a given district and fully familiar with local conditions and types of wool, can afford to offer the farmer a little more than ruling commandeer prices. He can do this because on proper classing the particular clip in question will yield several distinct lines of wool, and when these in their properly-prepared state are offered for sale they will fetch enough to pay all expenses and also yield a profit. The buyer's profit is the farmer's loss.

The moral from the farmer's point of view is to give more time and attention to preparing his clip for market. With a medium-sized clip, or bigger, he can do it himself, or employ a classer, or get his broker to do it. The small clip, however, is usually the one most affected by these conditions, and does not generally allow of much classing. However, the least the farmer can do is remove the bellies, and preferably skirt as well. He will usually be able to make one or two main lines of wool, but all small quantities of oddments should be sent in to a broker (preferably one who specialises in binning) for handling. These firms have adequate facilities for the proper handling of any line of wool, and, no matter how small the quantity, it will be grouped with fleeces of the same type until a large even line is assembled, which will thus fetch the farmer the full market value of his wool, less the small charge for binning.

Fertiliser Rationing

UNDER the fertiliser rationing scheme, farmers will be able to receive 40 per cent. of the average annual amount of phosphate which they have used during the past two seasons. This percentage has been fixed after an examination of approximately 70,000 returns which were recently made by farmers through their merchants.

However, the attention of farmers is drawn to the fact that arrangements have been made which will enable them to obtain other types of phosphate for topdressing, or cropping, in place of superphosphates if they so desire.

All farmers' rations are expressed in terms of superphosphate, but this can be replaced by other types of phosphate in conformity with the following table:—

Name of Manure.	Weight which may be delivered in place of 1 ton of Super.
	Tons cwt.
1. Superphosphate	1 0
2. Basic Super	1 4
3. Reverted Super	1 4
4. Serpentine Super	1 7
5. Heskett Slag	2 8
Super and Lime (1:1) ..	2 0
" " " (2:1) ..	1 10
" " " (1:2) ..	3 0
Basic Slag	1 0
Ammoniated Super (2S 1A)	1 10
Potassic Basic Super ..	1 5
Potassic Super (5% potash)	1 1

To clarify the above the following example may be taken: (1) Farmer A's ration is 10 tons of phosphatic fertiliser. He orders superphosphate. He will get 10 tons of superphosphate. (2) Farmer B's ration is 10 tons of phosphatic fertiliser. He orders reverted superphosphate. He will get 12 tons of reverted superphosphate as his ration.

In the event of farmers ordering mixtures for topdressing or cropping, the farmer's merchant must compute the amount of phosphate in the mixture, and the farmer will not be entitled to receive more phosphate than his ration entitles him to.

Britain Needs Cheese

THE vital importance of the drive for the production of greatest possible quantity of cheese is strikingly indicated by an extract from a letter received this month from Mr. G. V. Were, a dairy instructor and grader, of the Dairy Division, who is at present on loan to the High Commissioner's Office, London. Mr. Were, who has acted as dairy grader and instructor in the Wairarapa, Waikato, and North Auckland districts, has been in the thick of a number of severe air raids. He writes as follows:—

"Food is one of our major problems of the moment. Our week's ration of meat by careful cutting lasts two meals and the bacon ration one. Substitutes for meat have to be found for four days weekly, and that is not easy. If only we could obtain more cheese we could get along nicely. Cheese at present is a far more important item of diet than butter. We have to spread butter so thinly that we may as well use margarine for all the flavour we get from it, unless it is bad.

"If our dairymen in New Zealand could fully appreciate the need for more cheese in this country I feel sure that they would gladly make what comparatively small sacrifice this involves by having their milk converted into cheese instead of butter."

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NASSELLA TUSSOCK

Nassella tussock has become a very serious menace in the Waipara County, Canterbury, and a comprehensive survey is being made to determine the most effective control measures and to decide on a concerted line of action. A description of the characteristics of nassella and a plan of the survey are given in this article.

Survey To Determine Most Effective Control

By DR. H. H. ALLAN,
Director, Botany Division,
Plant Research Bureau, Wellington.

Nassella tussock: *a*, portion of plant; *b*, spikelet; *c*, "seed"; *d*, collar and ligule.

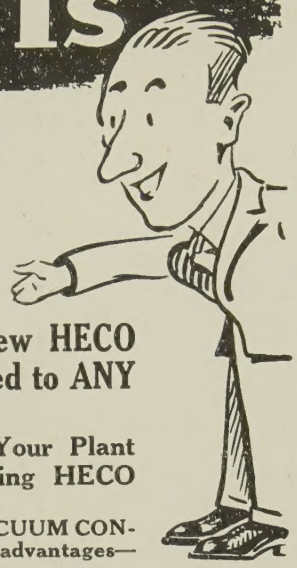
IN 1928 Mr. R. McGillivray, then Fields Superintendent, Christchurch, found an unknown tussock grass, of rather handsome appearance, on a farm at Waipara. He and his officers made a somewhat detailed examination, and found the grass to be well established near Waipara township, with more isolated occurrences elsewhere in the county. Inquiries have failed to elicit definite evidence as to how the plant first came to be naturalised in the district, although various suggestions have been made. It seems certain that the first appearance was some forty years ago. Because of its similarity in growth-habit to native tussocks, especially hard tussock, its spread in the earlier years was probably more or less overlooked.

In 1934 specimens came into my hand, and the plant was identified as *Nassella trichotoma*. The small South American genus *Nassella* is closely related to the needle grasses (species of *Stipa*), and occurs in Peru, Chile, Uruguay and Argentine. Our species is a widespread and characteristic plant of the Argentine pampas country. Dr. L. R. Parodi, the distinguished agrostologist of Buenos Aires, informs me that in its native haunts the grass is not eaten by stock, except when nothing else is available. In the highly cultivated areas it is easily controlled, and is there now found only in waste places, such as along roadsides and railway lines. Because of its "tumble weed" habits it is known as the "flying straw" (paja voladora).

Species of *Nassella* have reached Tweedside and Montpellier in wool from South America, and it is possible that this was the method by which the grass reached New Zealand. *Stipa neesiana*, a related, harmful South American grass, has been noted near wool factories in Scotland, France, Italy and Germany, and has recently been observed near Auckland.

In the Waipara County the grass has become a very serious menace. At the request of the Omihi branch of the Farmers' Union, the Plant Research Bureau Committee

Here it is



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3 AS WILL BE SEEN FROM THE ILLUSTRATION, the Heco Automatic Vacuum Control is compact, easy to instal and sturdy in construction. The secret of its remarkable efficiency is its simplicity.

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5 MILKING TIME IS REDUCED! Obviously, when the right vacuum is automatically and permanently assured, the time actually spent on milking must be drastically reduced. And, remember this—the reduction in time is secured not at the expense of your cows, but because you have given them the benefit of modern Heco methods.

Mr. Farmer; You are in business for profit. Like the business man in the city, you have to enquire into every method that will cut your production costs and protect the health of your herd. It will be in your own interests to enquire right away about the Heco Automatic Vacuum Control. We will be glad to send you full details.

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asked me in November, 1940, to visit the area under the guidance of Mr. McGillivray and arrange for a survey to be made. After preliminary investigations and discussions with the farmers concerned, an interim report was furnished, and arrangements were made for a more detailed examination. This could not be done at once, as the officer deputed for the work was on military service, but further examination of part of the area affected was made.

The Minister for Agriculture visited Waipara early in May, 1941, and met representative farmers, and saw some of the badly infested areas. As a result he promised that a survey should be undertaken at once. Mr. R. P. Connell, Acting Fields Superintendent, Christchurch, and the writer, who had accompanied the Minister, drew up a plan of work, and Messrs. A. J. Healy, Botany Division, and P. Barrer, Department of Agriculture, are now engaged on the survey. They have already found that the tussock is even more widely spread than was known.

Characteristics Of Nassella

An adult plant, growing free to develop fully, forms a dense tussock, with a fairly deep rooting system, a base of some six inches in diameter, a height of 20 inches, and a spread of 18 inches or more. At flowering time numerous inflorescences are produced, reaching about 40 inches in length. The foliage is very fine, harsh and tough, bright green and erect when young, paler and drooping when older. There is usually much dead, slowly decaying foliage covering the ground at the base. The flower stalks are slender and much branched above, with the final spreading branchlets each carrying a single flower, recognisable by the long, slender bristle terminating the seed and the purplish colour. An average plant will bear approximately 1,000 seeds. At maturity the whole inflorescence, with the seeds attached, separates from the plant, and acts as a "tumble weed"—that is, it is blown for long distances along the ground until it is arrested by some obstacle. During strong winds it may be carried high in the air for still greater distances.

The essential features which make the grass objectionable are:—

(1) The fine, harsh, tough, fibrous, inedible foliage.

(2) The capacity to grow in extremely dense communities, to the practical exclusion of other herbage.

How to Distinguish Nassella Tussock

	NASSELLA (*N. trichotoma*) Fig. 1.	HARD TUSSOCK (*Festuca novae-zelandiae*) Fig. 2.	SILVER TUSSOCK (*Poa caespitosa*) Fig. 3.	NEEDLE-GRASS. (*Stipa variabilis*) Fig. 4.
Appearance of adult:	Dense tussock, with pale drooping foliage, and purplish flowering parts, drooping outwards. Leaf-bases pale, somewhat swollen.	Dense tussock, with straw-coloured foliage, not drooping, and pale, erect flowering parts.	Dense tussock, with yellowish to brownish-green, slightly drooping foliage, and straw-coloured, erect, but spreading flowering parts.	*Small tufted plant*, with short leaves of greyish green appearance, and tall, erect flowering parts.
Leaves:	About 20 inches long, very narrow, rough to downward touch.	About 14 inches long, very narrow, but less so than *Nassella*, rough to downward touch.	About 20 inches long, narrow, but less so than the two former, somewhat flattish, *smooth to downward touch.*	About 5 inches long, narrow, rough to downward touch.
Collar: ..	With papery, rather long ligule, somewhat eared.	Short, finely cut at tips, distinctly eared.	Reduced to narrow rim, not eared.	Distinct, with long fine hairs, distinctly eared.
Inflorescence: ..	Ample, spreading, drooping, the whole *easily detached.*	Ample, somewhat spreading, hardly drooping, not easily detached.	Less ample, more erect, not easily detached.	Ample for size of plant, erect, not easily detached.
Stalk: ..	About 15 inches long, smooth.	About 12 inches long, *rough*	About 15 inches long, smooth.	About 6 inches long, smooth.
Flowering part:	About 10 inches long, spreading and drooping.	About 6 inches long, narrow and erect.	About 6 inches long, somewhat spreading, suberect.	About 6 inches long, erect, not spreading.
Spikelets: ..	Single-flowered, purplish.	Several-flowered, pale green to straw-coloured.	Several-flowered, pale green to straw-coloured.	Single-flowered, greyish to slightly purplish.
Seeds—Base: ..	Somewhat pointed, hairy.	Blunt, free from hairs.	Blunt, with cobwebby hairs.	Sharply pointed, hairless.
Body: ..	Short, broad, plump, ribbed, rather rough.	Rather long, smooth, rounded on back.	Rather long, roughish, keeled on back.	Long, narrow, hairy, terete.
Bristle: ..	Flexuous, about 1 inch long, twisted below.	Very short, straight.	Without a bristle.	About 2 inches long, strongly twisted below, bent at almost a right angle.

(3) The power of seedlings to develop even in dense areas, and to replace old and decaying tussocks.

(4) The mat of dead foliage and flower stalks accumulating between the tussocks, aiding in killing out or preventing the establishment of other plants.

(5) The prolific seeding habit and apparent powers of the seeds to remain viable for long periods.

(6) The tumble-weed habit of the inflorescence, which, coupled with its lightness, enables the seed to be spread in quantity for great distances.

(7) The power of the seedling to establish under shade, maintaining the dense cover once it is established.

(8) The power of the seedlings to establish in all but the densest pastures.

(9) The long bristle and the pointed base of the seed, enabling it to penetrate the wool of sheep.

(10) The resistance to control by methods hitherto devised.

Comparison with Native Tussocks

As it is most important for all concerned to be able to distinguish the different tussocks, the accompanying table has been drawn up, which should be read in connection with the illustrations. A description of needle-grass (*Stipa variabilis*, naturalised from Australia) is included, as this pest (the seed is injurious to sheep) is well established near Waipara, especially on stony riverbeds. It has been sometimes mistaken for young *Nassella*.

Needle-grass is at once distinguished by the small size and the very long bristles of the seed, bent at an angle. Young plants of *Nassella* can be distinguished from those of needle-grass by the absence of the long hairs at the point where the leaf joins the stem. Silver tussock can be distinguished at all stages by the leaves not feeling rough when they are rubbed down-

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wards between finger and thumb. Hard tussock, or fescue tussock, and *Nassella* are less easy to distinguish in the young stages, and a close examination of the leaf differences is necessary until experience is gained.

Area Occupied

The area at present under attack by *Nassella* is extensive, but the survey has already shown that infestation in the Cheviot county is more severe than had been reported. Isolated plants have been noted near Saltwater Creek, just north of Ashley.

The most extensive area at present known to be severely affected is that near Waipara township and extending on to the western slopes of the coastal hills on both sides of the Waipara river. Less extensive densely infested areas occur near Scargill, Motunau, and elsewhere in the Waipara county.

Plan of Survey

The following is an outline merely of the plan of survey being followed, which is subject, of course, to modification as the work proceeds.

(1) Close survey of the areas known or reputed to be under attack and adjacent areas. Reconnaissance survey of neighbouring country.

(2) Comparison of infestation on arable and on pasture land, with study of the nature of the ground and aspect most open to invasion, including study of limestone and non-limestone areas.

(3) For the purpose of the survey the Waipara county and parts of the Kowai and Cheviot counties have been divided into blocks, and the nature and degree of infestation will be mapped out on each.

(4) The results will be classified under the headings:—

(a) Areas so badly affected that they are out of production or are under distinctly diminished production.

(b) Areas seriously, but more lightly, affected.

(c) Areas with only small, local occurrences.

(d) Areas free, but liable to early invasion.

(5) General information will be gathered by consultation with farmers and by observation as to methods of control adopted, the degree of success gained, the relative proportion of the holdings attacked, the relation of attack to methods of farming, the topography of the country, and the location and extent of plantations and shelter belts.

(6) Gathering data affecting the possibilities of afforesting the worst areas.

(7) Examination of the incidence of *nassella* in temporary pastures and the lucerne stands.

(8) Observations on the relative importance of the various ways in which the tussock may be spread.

Attempted Control Measures

Efforts at control have so far been confined to a few areas, and have met with but little measure of success.

(1) **Burning.**—Indications are that a fierce fire is needed, and that the tussock rapidly recovers. Often, the centre is burnt out, but a ring of growth shoots up from the margin, while small tussocks may be little affected. Burning also opens the ground to the growth of seedlings and fresh invasion of seeds. These are disadvantages, even when no more is attempted than preventing the plants coming into flower. On some burnt areas late flowering has been noted.

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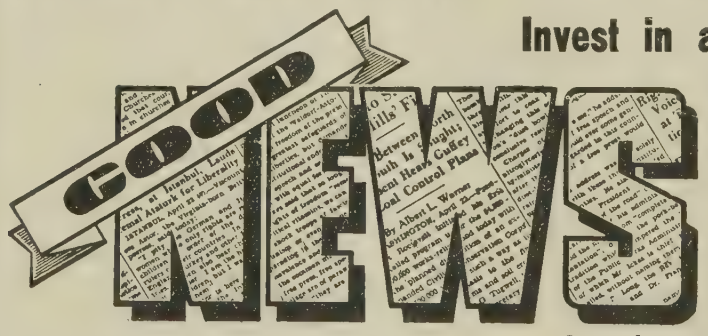

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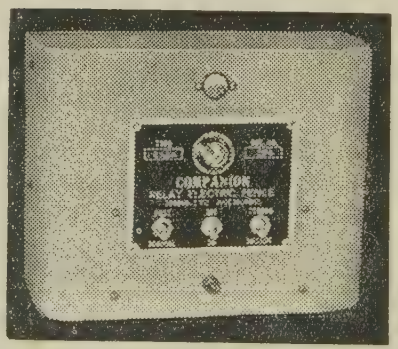

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Hard fescue: ***a,*** **portion of plant;** ***b,*** **spikelet;** ***c,*** **"seed";** ***d,*** **collar and ligule.**

Needle grass: ***a,*** **portion of plant;** ***b,*** **spikelet;** ***c,*** **"seed";** ***d,*** **collar and ligule.**

Careful controlled experiments should be made before any general recommendation to burn is made.

(2) **Grubbing.**—This has been tried on many areas, with conflicting opinions as to the result. I have observed many tussocks killed by this method, but there is some evidence that the disturbance to the soil hastens the germination of seed already shed on the ground. It is certain that in areas long subject to the grass the seed content of the soil may be high. Tussocks that have been grubbed too deeply have been noted to recommence growth. It is, however, a useful method of control in newly-attacked areas of no great extent.

(3) **Cultivation.**—It appears to be generally accepted that the tussock can be controlled quite well in cultivated land by the ordinary methods of procedure. Cultivation on the hill country, however, where it is possible, is inadvisable at such frequent intervals as would be needed to control the tussock. The dangers of too frequent cultivation on such country is shown by the erosion already setting in on certain areas.

(4) **Insect Attack.**—Several caterpillars have been noted feeding on the tussocks, weakening and killing the growth in the centre. No evidence of any real control has as yet been noted, and in areas where the silver tussock is still plentiful this would also be liable to attack.

(5) **Pasture.**—A really dense pasture delays the entry of the tussock, but is, of course, difficult to obtain and maintain on much of the hill country.

(6) **Sprays.**—But little effort has been made to control the tussock by the use of sprays, and no certain evidence is available as to the possibilities of success on these lines.

(7) **Plantations.**—Plantations and shelter belts, especially those with a somewhat dense bottom growth, aid in checking spread, and careful consideration will have to be given to the proposal to afforest the worst areas. The plan appears sound on areas that are already practically out of production.

Conclusion

It will be clear from the above that after the completion of the present survey it will be necessary to consider all the problems raised to determine on a concerted line of action and see that it is carried out. The massed battalions now in the field will not be rolled back by spasmodic and haphazard efforts.

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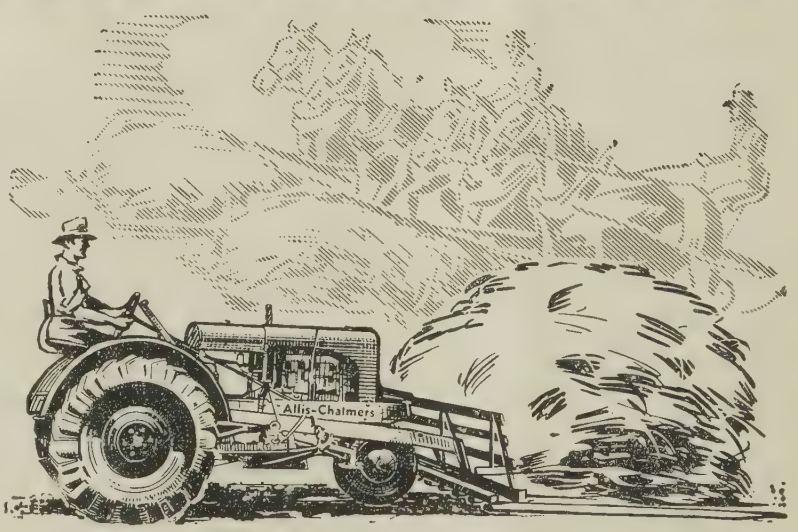

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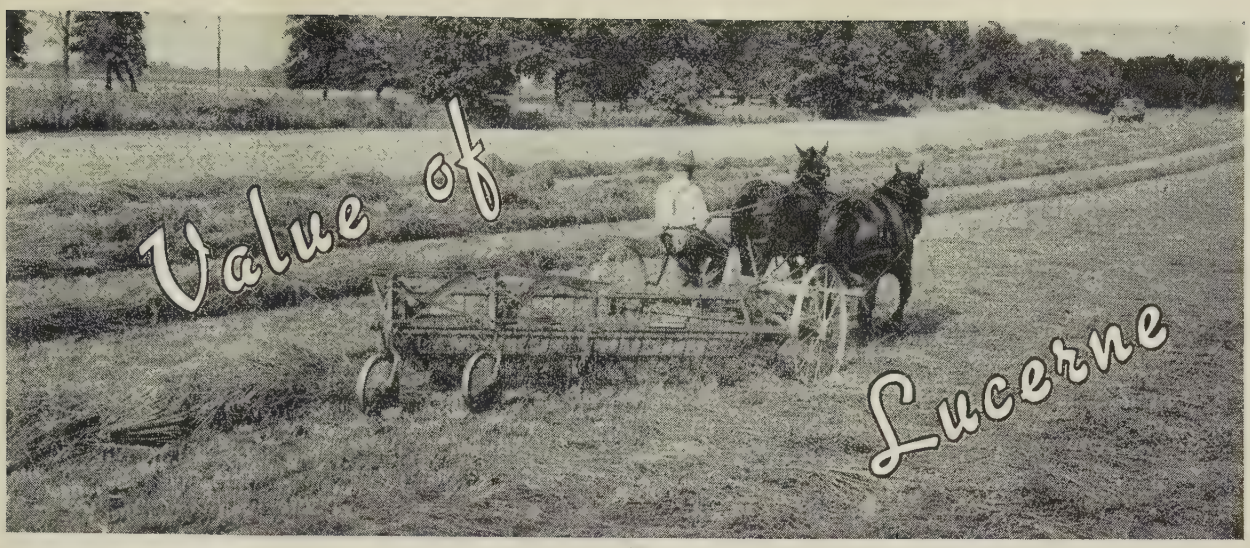

New Methods of Harvesting Have Increased the Value Of This Bountiful Crop

By
D. R. WILKIE,
Instructor in Agriculture,
Blenheim.

NO fodder can produce from the same acreage and in the same given time such a great tonnage of protein-rich food as lucerne. It has long been a complaint, however, that lucerne takes too much looking after in that it requires cutting and harvesting four to five times in a season, and the following comments of a very American farmer make interesting reading:—

"If you don't want lots of trouble, don't sow lucerne. Along the middle of June, when the corn needs cultivation the most, we had to stop and cut the darned lucerne. It was in bloom—three feet high. We had to haul in 20 loads of hay off of it. In July the folks in town invited us to spend a week attending the show. I suppose they were glad when they got my postcard announcing that we could not come, because we had to cut that blamed lucerne patch again. Gee, but it was hot, hauling in that hay. Worse still, I was fool enough to go to work and sow five more bushels of lucerne seed. The only rest I'll get hereafter from hauling lucerne will be on rainy days.

"It got to rain in September and about the first thing I knew—that darned lucerne was three feet high and all in bloom—it had to have another hair cut. Then Barnum and Bailey's circus came to town, and darn my buttons if I didn't have to miss that circus for the first time in forty years. I got mad and then turned the pigs, cows, and calves into it and still the blamed stuff kept growing to beat the band. They could not keep it down—they got fat on it.

"But still, this lucerne hay that we sweat so cutting and stackin' makes mighty fine stuffin' for the cows these cold ground hog days. Everything on

A pick-up power baler at work on a windrow.

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A double-cut tractor mower at work on a lucerne paddock in the Seddon district.

Stationary baler and sweeps—a common sight during haymaking.

the place eats it, except the hired girl, and she ain't been here long enough."

In the past, even with a limited supply of labour and without the proper facilities, the harvesting of lucerne has undoubtedly presented difficulties, but, as in many other avenues of production, modern machinery has come forward to undertake the work. Examples of this machinery now being used in Marlborough give an idea how far lucerne harvesting has progressed from the methods used in the days of our American friend.

First in line comes the tractor mower. Recently one was observed making an excellent job and cutting two swathes at the same time. In this way a standing crop is soon "laid low" with a minimum of time and effort. Experience has proved that this is a most efficient method of cutting the lucerne, and the work is accomplished rapidly at low cost.

Another machine which is being used extensively is the hay tedder. This does the work of taking the cut lucerne from the swathe and placing it in windrows, where the drying takes place. Turning of the swathe is also easily accomplished by this machine, which is an asset to any farm where hay is made. Previously lucerne in Marlborough was generally swept up out of the swathe and pressed in a stationary power baler. This method has much to commend it, but the pick-up power baler has now made its appearance, and although it has scarcely been in operation long enough to allow farmers to become thoroughly acquainted with its capabilities, a considerable amount of hay was made by this method last season. This machine picks up the lucerne hay direct from the windrow, and the bales are pressed, wired, and dropped in the paddock, from which they can be collected by lorry.

Using the methods outlined, the saving in labour is enormous, and the once arduous task of cutting, sweeping, and stacking is greatly simplified. With such harvesting facilities available, there are few crops that can compare with lucerne, which presents a most attractive financial proposition to the individual farmer. Probably no other crop is so sure in its return when once established or has so many avenues for exploitation.

Lucerne is an excellent green fodder and produces the highest quality hay and, being a legume, it improves the soil by supplying nitrogen. During dry conditions the value of this crop is most apparent when good grass paddocks may be seen "burnt-off," while lucerne almost invariably presents a green, thriving appearance. Lastly, as a seed crop, lucerne can give wonderful returns.

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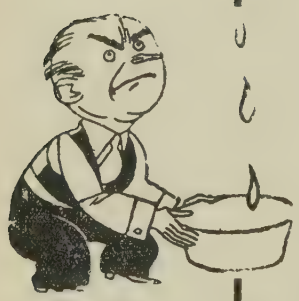

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Lucerne Worthy Of Its Place In Central Otago

By

W. R. LOBB,
Instructor in Agriculture,
Dunedin.

ALTHOUGH the importance of lucerne throughout Central Otago is becoming better known each year, it has been slow to gain the recognition it deserves, and at the present time there are many districts in which lucerne is deserving of a much wider use. Its extension is, however, gradually going on, and today the tendency is to sow very much larger areas per farm—up to 70 and 80 acres—instead of the small hay paddock which was the vogue in the early days of lucerne growing. The value of this changed outlook cannot be too greatly stressed for many areas in Central Otago.

Some of the factors responsible for this changed outlook are:—

(1) The realisation that the grazing of lucerne is profitable.

(2) There is much more certainty in obtaining a satisfactory strike since the introduction of inoculation.

(3) The use of lime.

(4) The study of soil conditions.

(5) Increased costs of growing root crops and their uncertainty.

(6) Power machinery for handling crops.

(7) A genuine desire for better winter feeding.

The last-mentioned factor has had a very large influence, and is possibly the greatest single factor for the increase of lucerne in areas where it has already proved its worth, and also in taking lucerne further afield. The instance can be quoted of the establishment of lucerne on the Styx Plain, which is 1800ft above sea level. Here the winter is long and the conditions very severe, and the average winter feeding for flocks of approximately 2000 sheep has in the past required the cultivation of more than 200 acres of land each year. It is natural, therefore, that some plant would be looked upon to fill part of this winter feed requirement. It is this factor which has brought about the successful establishment of lucerne there.

Soil Conditions

A study of soil conditions and a realisation of the part these conditions play in the growth of the plant and on soil organisms has been an important factor in successfully establishing some lucerne stands. In one case, for example, it was found that very little could be established on some of the alkali soils in low rainfall areas. Where the conditions have not been too extreme, it has been found possible to obtain lucerne stands by sowing after heavy rain. Once the lucerne is well established and the roots have penetrated beyond the alkali the stand should flourish.

Here, again, irrigation has played an important part. Surface irrigation of lucerne tends to weaken a stand and, if continued, will in time result

A lucerne stand and stacks in the Styx district.

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in the complete disappearance of the lucerne in favour of grasses which utilise more surface water for their shallow root system. This applies to some conditions only, and the case of irrigating young lucerne on alkali patches is, for instance, an exception. The water tends to remove the salts from the sphere of activity of the roots while the young plants are establishing, and stands have been obtained in this way where it has been impossible to obtain them previously.

A further point in obtaining good strikes after a study of soil conditions is found in the application of lime to sour soils, where previously strikes have been poor and stands have ultimately failed, due to their inability to compete with grasses and weeds which have found the conditions more to their liking. On the whole, the lucerne country in Central Otago is "sweet," but there are exceptions. Where these are being studied, lucerne is being successfully grown where previously it has been condemned.

Inoculation effect on four-year-old stand. Left, non-inoculated; right, inoculated.

Use of Culture

Very few attempts are made to establish lucerne without the use of the bacterial culture. This practice is so well established as to need little comment, but one must not look upon the value of the culture from the sole standpoint of assuring a strike.

The accompanying illustration shows the results of inoculation after four years. On the right is a fairly dense healthy sward which received the culture when established. On the left is a strip at the end of the paddock sown without culture. The effects of the culture were noticeable immediately, but it has become more outstanding each successive year, until now, after the fourth year, parts of the non-inoculated stand have given way completely to the competing grasses and

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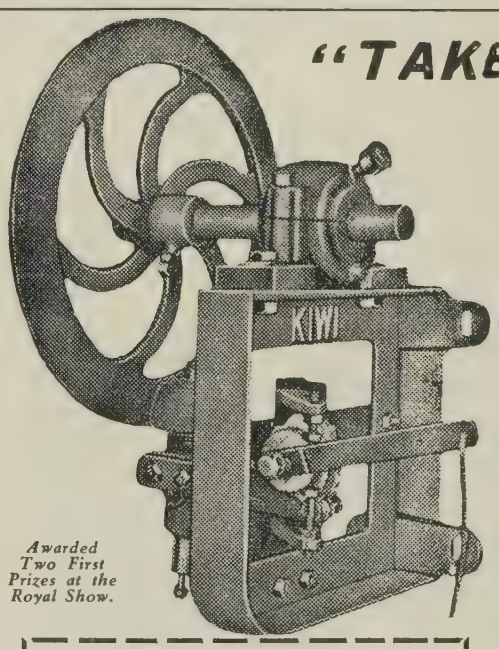

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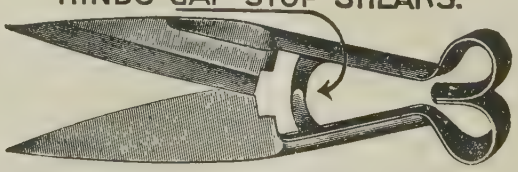

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weeds. The lucerne plants on the left are becoming choked by grasses and weeds, and are producing only a small percentage of the bulk produced by the plants on the clean stand.

Lucerne as a Winter Feed

Many farmers now realise that lucerne can be successfully grazed and is providing an essential link in the food supply of ewes and lambs. The number of early lambs obtained from ewes running on lucerne is increasing each year, with the result that more and more stands are being used for this purpose. Lucerne is also coming into its own for fattening store lambs and old ewes, although later in the season lambs do not flourish as well or put on weight as quickly as they do on rape. The uncertainty of the rape crop in many districts, however, mitigates against its use, and it is well that lucerne can be relied upon to take its place.

It should not be taken for granted, however, that lucerne can be haphazardly grazed—indeed, there are many questions involved, not only on the animal side, but also from the point of view of the plant. For instance, lucerne on heavy, rich soils will not stand as hard grazing as will that on light soils. Grasses, clovers, and weeds will encroach on good soils, and will compete to the disadvantage of lucerne under hard grazing conditions.

There are many light soils in Central Otago which will grow very little else but lucerne. In such cases lucerne has been grazed "as bare as the road" and made great recoveries. Such stands will maintain themselves for years because there is little competition from other species. Under competition, lucerne is not generally killed out through the grazing animal, but more often because it is placed at a disadvantage with other plants, either because they are not palatable and are therefore not grazed, are quicker recovering after grazing, will stand more tramping, or will stand closer grazing.

Rates of Seeding

The rates of seeding have an important bearing on the results. Although excellent stands of lucerne have resulted from the drilling of less than 5lb. of seed to the acre, there is no doubt that the lack of competition factor has played a significant part. A low seeding will give results if conditions are right and if the competition from other plants is negligible, but there are very few conditions which would warrant the risk of sowing as little as 5lb. to the acre. In some cases where the soil is heavy and the weed invasion (both of annuals and perennials) is likely to be severe, 18lb. to the acre may not be considered too much. Here, again, the farmer who studies his soil conditions, his cultivation, and his previous results can form a sound opinion on what is likely to be the result of sowing too small a quantity of seed, and can guard against doing so.

The value of lucerne as a hay crop has been proved, and it is well utilised today. Under good conditions, lucerne will give four and sometimes five cuts in the season, and has yielded nearly ten tons of hay to the acre in Central Otago. In dry conditions, if a stand of lucerne had a life of only five years under grazing, it would still be ahead of anything yet known in giving results on much of Central Otago's grazing lands.

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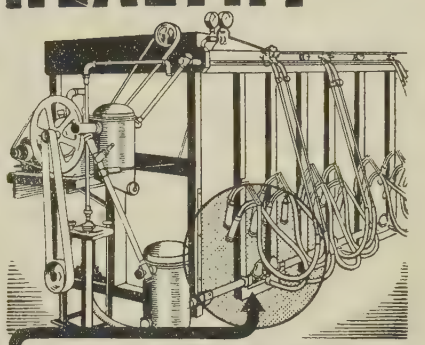

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Management of Lucerne Is Important

— By —
E. G. SMITH,
Fields Instructor, Rangiora.

IN the growing of lucerne the majority of farmers appreciate the importance of careful preparation of a clean, firm seed bed, the use of lime, the use of culture-treated seed, and the fact that seed must not be buried to a depth of more than one inch. What is not so widely understood, however, is the correct subsequent treatment of both the lucerne stand and the material cut from it, and it is the purpose of this article to stress this "management factor," which is of vital importance if best results are to be obtained.

In the first year, if competition from weeds is threatening the establishment of the lucerne, the crop should be cut early, but under normal conditions cutting should not begin until the second growth makes its appearance at the base of the majority of the plants. If the stand is cut at an earlier stage the plants are weakened, while later cutting reduces the number of possible cuts for the season, and at the same time results in the production of stalky hay which has lost much of its leaf and therefore a great part of its nutritive value.

Lucerne Silage

Because of adverse weather in the early part of the season the first cut of a lucerne stand is frequently made into silage. Lucerne is rich in protein, and for this reason it is good practice to add a proportion of grass, as a better balanced fodder is then produced. Subsequent cuts are usually made into hay. The last cut of the season should be taken sufficiently early to allow some growth to take place before the dormant period. This not only assists root development, but also aids in the checking of weed growth.

In the production of good-quality lucerne hay, cutting at the correct stage, as described above, is of first importance, but for best results this must be followed by careful handling of the crop. Modern harvesting methods tend to obviate the use of the hay fork, but hay cocked with a rake or swept out of windrows is often inferior to that which has been cocked by hand. If the crop is raked into windrows when half-dry and cocked with the fork on ground clear of the windrows, it "makes" in the cock, lifts cleanly, and loses a minimum of leaf. Hay made in this way is easier to handle either on the stack or at the hay press, and the increased labour cost is

MANUFACTURED BY CHALLENGE PHOSPHATE CO., LTD. AUCKLAND

usually more than offset by the gain from the improved quality of the material.

For topdressing, annual applications of lime will give excellent results in most districts, and will go a long way towards enabling the lucerne to combat the invasion of weeds successfully.

Cultivation promotes growth, but because of damage to plants, it is advisable only when the competition from weeds is threatening the life of the stand. Even then, it should be carried out only during a dry spell, and the cultivator should be fitted with narrow lucerne steels.

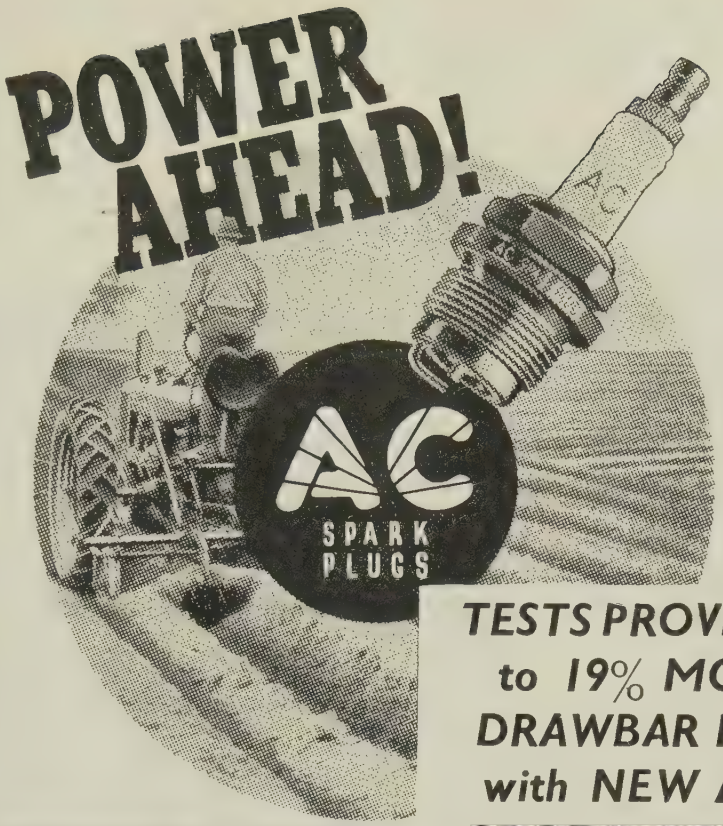
Grazing

Lucerne should not be grazed in its first year, and later grazing should be light. The stand may profitably be grazed in spring to clear up old growth, and in the autumn when, on entering the dormant period, sufficient growth has not been made to allow another cut to be taken.

As cattle are susceptible to "bloat" when grazing lucerne, they must not be turned on the crop while it is wet, and careful initial regulation of the grazing is essential if losses from this cause are to be eliminated. For a start, the stock must not be left in the paddock for more than a quarter to half an hour, but after a time they will become accustomed to the new type of feed, and it will be found that they can be left on for an hour or longer without suffering any ill effects. Most dairy farmers, however, have a few cows that are particularly subject to bloat, and these should either be kept off lucerne altogether or watched most carefully. Sheep and horses are close feeders, and should not be permitted to graze lucerne hard.

If the stand has been invaded by useful grasses it may be found that the greatest value can be obtained by utilising the area primarily for grazing purposes. Where this is the case, it will be found that the danger from bloat is very much reduced because of the mixed nature of the herbage.

In some cases, stands of lucerne have given good results for thirty years, but if an area lasts for only a third of that time the farmer is well repaid for the work entailed in the laying down and subsequent care of this most valuable crop.



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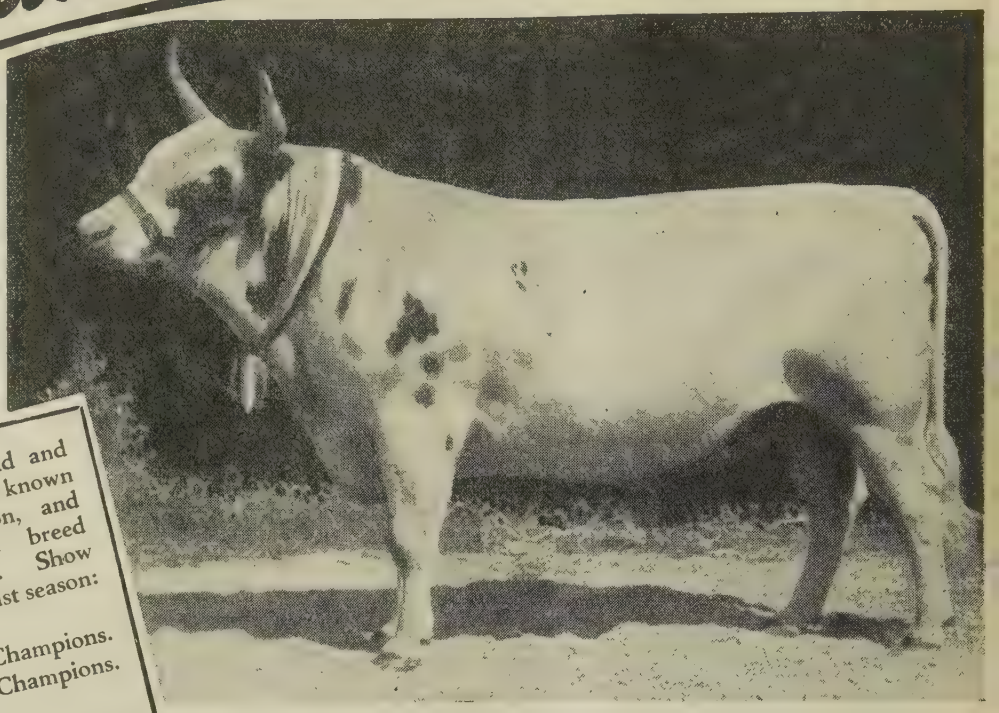

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LIQUID MANURE AS A MONEY-MAKER

During the last three years the Taranaki farmer whose farm is discussed in this article has increased his herd from 53 to 85 cows. He considers that much of this increased carrying capacity was due to the treatment of 55 acres with liquid manure, the outlay for which was only £75.

A view of Mr. C. A. Marchant's farm at Cardiff, Taranaki, where liquid manure is used.

Carrying Capacity Increased By 40% in Three Years

By G. A. BLAKE, Instructor in Agriculture, Stratford.

AMONG those who appreciate the value of liquid manure for top-dressing paddocks are Mr. C. A. Marchant, a prominent member of the Dairy Board and a successful breeder of Fresians, and Mr. W. Pitcairn, the manager of Mr. Marchant's Cardiff dairy farm, where for the past three seasons the cowyard manure from the milking shed and yards has been regularly distributed over the pastures of the farm as liquid manure.

The farm is on the Cardiff road near Stratford at an elevation of 1400 feet, and growing conditions in the winter and early spring are anything but good. The country is flat to undulating, but with two deep gullies cutting across the area. The soils are light volcanic, with, however, a good rainfall.

The plant for collecting and distributing the cowyard manure was put in three years ago at a cost of £75. The plant was designed to handle the manure from the 53 cows being milked, and consists of a concrete sump to hold 3000 gallons, an electric pump which will lift 100 gallons a minute to the distributing tank, and two 200-gallon tanks which can be easily put on and off the farm truck as required.

Because the yard has been extended at different times and the drainage does not always run towards the sump, the solid manure from the yards is carried to the sump in a wheelbarrow, and only the milking shed and part of the holding yards are washed down into the sump.

Treatments Over Three Years

In the first year, when 53 cows were milked, the 3000-gallon sump was filled every 14 days, and 16 acres of the pastures were top-dressed with liquid manure at the rate of about 16 to 18 tons per acre. With the motor truck and two 200-gallon tanks, it takes about two to three hours to empty the sump and distribute the liquid manure. Five of the 16 acres treated were specially top-dressed in the late autumn for early spring feed with really outstanding results. In the second season 59 cows were milked, and the sump was filled in about 12 days. Another 18 acres was top-dressed this season, including five acres for early spring feed.

For the third season the herd was increased to 66 cows, and the sump

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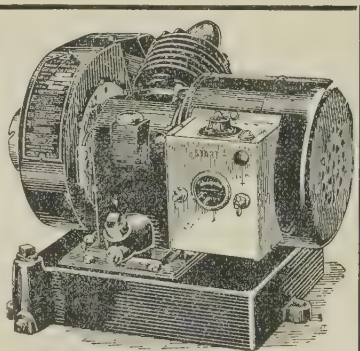

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The solid droppings are collected and dumped into the sump.

The washings from the shed and yard collect the valuable urine and serve to dilute the manure for distribution.

A block in the drain to the sump diverts rain or other unwanted water from the sump.

was filled every 10 days. This season, 21 acres were top-dressed, the five-acre paddock specially top-dressed for early feed being one of the paddocks already treated. The results on this paddock showed that although the first dressing gave very good results, the second one was outstanding. In the three years, 55 of the 120 acres have been treated with the liquid manure.

Although it would take about seven years to go over the farm at this rate, Mr. Marchant considers that it will be best to treat the whole farm rather than to concentrate at this stage on a limited area. The second treatment of the one five-acre paddock has convinced him, however, that remarkable results could be obtained by a little more concentration than what he has aimed at so far.

From the rate at which the sump is filled, it will be seen that for each cow about four gallons of liquid manure per day was collected on this farm, and the distribution shows that an acre was top-dressed for each three cows milked. The quantity of liquid manure handled will, of course, depend on the amount of water required and used to wash down the shed and yards. This will also affect the concentration of the manure. The thinner the liquid the easier it is to pump and

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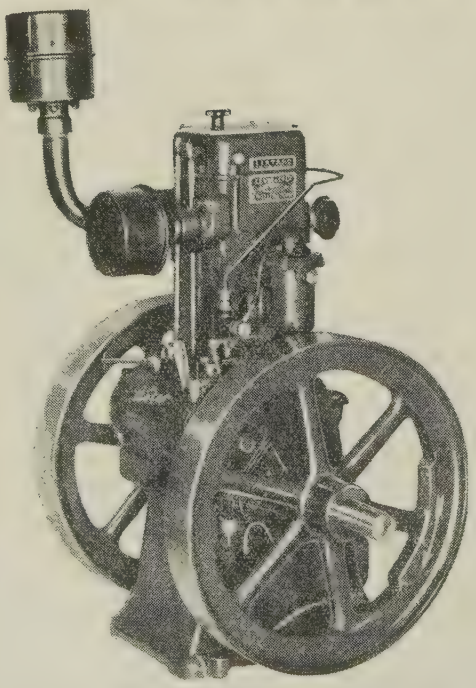

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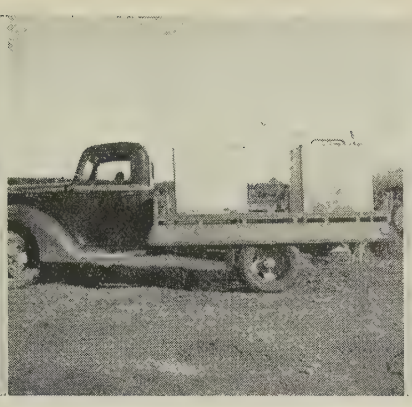


The farm truck picks up the tanks for filling at the sump.

The liquid manure is applied at 16 to 18 tons per acre. The 400-gallon tank is emptied in about four minutes.

distribute, but the more concentrated should be the application.

Greater Yields

Some interesting results were obtained in top-dressing hay and ensilage paddocks with the liquid manure. Two ensilage paddocks and a hay paddock were treated before being shut up, and showed the value of this manure in getting a better crop. A portion of one of the ensilage paddocks which had to be missed before closing was pale in colour and a much thinner crop than the treated area. The heaviest crop of hay yet cut out on the farm was obtained from a paddock top-dressed with liquid manure just before closing. Any small areas of a paddock missed in spreading the liquid manure show up very clearly for a long time. The effect of the one application of manure is very distinct and lasting.

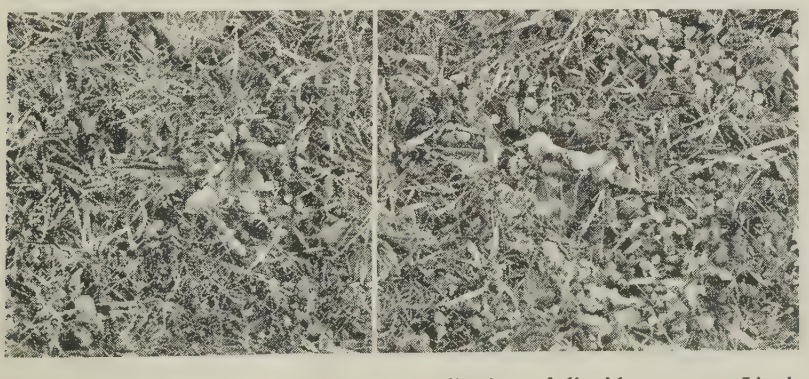
This season it is intended to milk 85 to 90 cows, and the manure from the cowshed will, it is expected, be sufficient to cover between 25 and 30 acres. The drainage from a new pig fattening pen will also go into the sump and will provide for a few more acres. A large proportion of the minerals from the whey and other food for the pigs will then go back to the pastures.

The farm is top-dressed with phosphate manures and lime at about 3cwt per acre, and the liquid manure is applied as an extra. Both Mr. Marchant and his manager, Mr. Pitcairn, are convinced, however, that the outlay of £75 has been more than repaid, and that the two to three hours required every 10 to 14 days to spread the manure is well worth while. Much of the increase in carrying capacity during the past three years—that is, from 53 to 85 cows—is definitely attributed to the treatment of the 55 acres with liquid manure.

The area first treated three years ago is still showing the results. With the increase of the herd and the addition of the pigsty manure it will be possible to cover the farm every four years with a good and lasting dressing of liquid manure.

It is certain that the severe cut in the fertiliser available this season will mean much less to farms such as Mr. Marchant's, where liquid manure can be used to keep things going, than it will on the great majority of dairy farms where this valuable source of farm manure is wasted.

Farmers who use liquid manure from the cow bails and yards to top-dress the pastures or manure crops have one complaint—there is never enough.



Left: No liquid manure. *Right:* One application of liquid manure. Liquid manure encourages the clovers as well as the grass.

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CONTROL OF "BROWN HEART" OF TURNIPS AND SWEDES

Experiments are described in this article in the use of borax compounds to control "brown heart" of turnips and swedes without adversely affecting the germination and early growth of swedes. Broadcast applications of 40 lb. borax per acre are recommended.

A typical case of brown heart in swedes.

By

P. B. LYNCH,
Assistant Crop Experimentalist,
Wellington.

EXTENSIVE experimental work in this country and overseas has amply demonstrated that the disease known as "brown heart" or "mottle heart" of swedes and turnips can be controlled by the application of small amounts of borax to the soil. It can be confidently stated that this disease is due to a deficiency of boron in the soils on which the crop is grown.

Despite this, however, two major problems in the use of borax (which is the most common form in which boron is applied) have arisen in New Zealand, namely: (1) The amount of borax required to control mottle heart in some cases approaches that amount which causes severe germination injury, and (2) in some districts and in some seasons only a measure of control is obtained with borax.

Severe germination injury from borax is caused by the toxic effect of too high a concentration of soluble boron compounds around the germinating seeds and young seedlings. The sowing of soluble fertilisers, such as superphosphate, in contact with the seed will also cause germination injury, but this is of a different nature from that due to borax, and may be overcome by the use of superphosphate and lime mixtures, reverted superphosphate or serpentine superphosphate when the fertiliser is drilled in contact with the seed. It is this latter practice of drilling the seed, manure and borax together that has made the problem of borax injury to

A very severe case of brown heart in which small cracks have occurred, marking the outer limits of the diseased zone.

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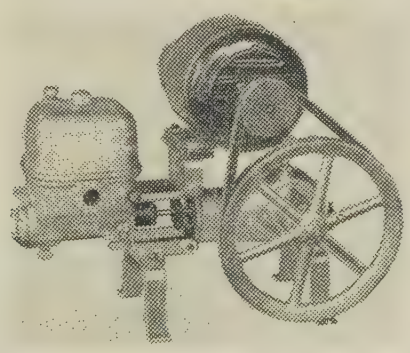

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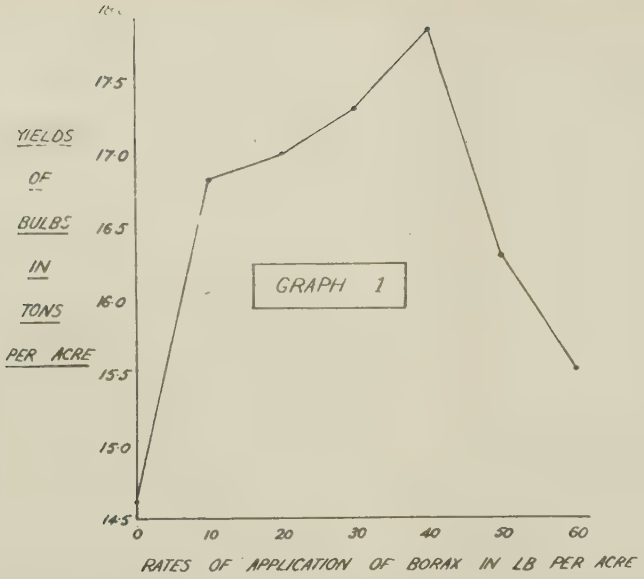

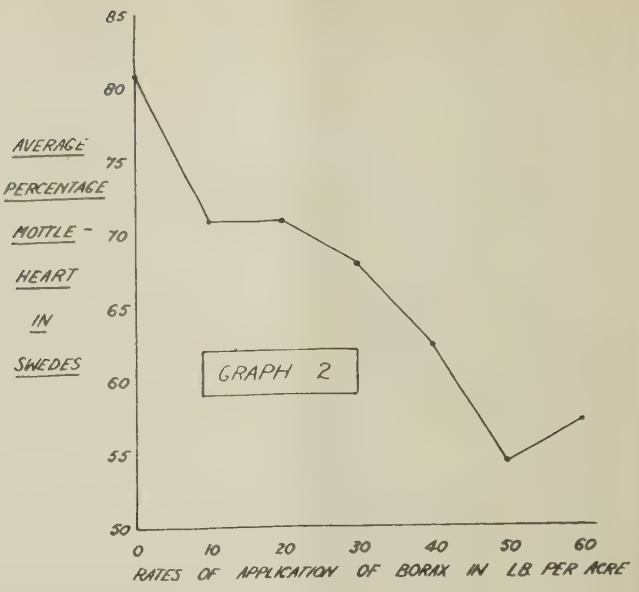

germination of much greater significance in New Zealand than in other countries.

Typical borax injury is seen in seedlings with white or yellow cotyledons (or seed-leaves) and in stunted growth of seedlings. Seedlings in the rough leaf stage may be dwarfed, with wrinkled leaves, and these are often variegated. Such seedlings are easily killed by dry weather or adverse growing conditions, although if they survive they will later turn green and appear normal. Trials have shown, however, that the yield may be seriously reduced due to this early check in growth. Germination counts have also shown that many seedlings are completely killed, and further, that those surviving take longer to come through the ground. A typical case is given in the accompanying table.

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Treatments per acre.	Percentage germination on	
	Dec. 30, 1938	Jan. 12, 1939
Super 3 cwt. ..	45	45
Super 3 cwt. + borax 15 lb. ..	32	40

Trials at Marton

The problems outlined above were investigated in a series of experiments at the Marton Experimental Area over the past three years. The methods of approach were as follows:—

(1) The search for other more slowly soluble compounds of boron than borax or the use of mixtures of borax and inert materials.

(2) The effect of increasing the rate of seeding.

(3) The resistance to germination injury and to mottle heart attack shown by different swede varieties.

(4) The method of placing the seed, manure, and borax in the soil.

(5) The effect of soil moisture and season.

(6) The effect of time of sowing the seed.

(7) The effect of applying borax at different times before and after sowing.

The results of a large number of trials, some hand-sown and some drilled, may be summarised as follows:—

(1) No compound of boron was discovered which was sufficiently available to the plant to control the disease while at the same time giving no injurious effects when sown with the seed of swedes and turnips. Compounds tried were "rasorite" (a more concentrated form of borax), calcium borate (borax is a sodium borate), recrystallised borax (in large crystals), various pellets of a clay (bentonite) and borax, and various mixtures of borax with fertilisers and various rates of application of these, but none of them was significantly different from commercial borax in effect on germination.

(2) **Rate of Seeding.**—Increasing the seeding rate per acre when drilling with borax in contact with the seed gave a greater number of plants per acre. Although in some cases lighter seedings resulted in higher percentage germination figures, these increases were not sufficiently great to compensate for the lower number of seeds sown. Increasing the rate of seeding may, therefore, provide a means not of reducing germination injury, but of securing a sufficient number of residual plants in the field.

(3) **Variety of Swede.**—Vilmorin and Wilhelmsburger appear to be slightly more resistant to mottle heart attack than Superlative and Sensation, although for some reason Vilmorin was in one trial the most severely affected by germination injury.

(4) **Placement of Manure and Borax.**—Severity of germination injury is directly related to the amount of borax that comes in contact with the seed. The most successful treatments were broadcasting and application in bands 1 to 1½ in. to the side of the seed in the drill. In the absence of suitable implements it is therefore recommended that borax be applied broadcast.

(5) **Effect of Soil Moisture and Season.**—The greatest germination injury is found in a dry season, but, nevertheless, heavy rain shortly after the borax is applied appears to leach the material through the soil so that there may be little control of the disease. This was particularly marked in the trials in the 1939-40 season, when the infection of mottle heart was severe on all treatments. If very heavy rain falls shortly after applying borax it may be advisable to broadcast a second application.

(6) **Effect of Time of Sowing the Seed.**—This is directly related to the above factors of climate and soil moisture.

(7) **Effect of Applying Borax at Different Times.**—Application of borax during or shortly after sowing may be superior to application well before sowing, but the effect of rainfall in relation to time of application may have been the deciding factor. It has been demonstrated that application may be made as late as the rough-leaf stage of growth and yet give satisfactory results.

Amounts of Borax To Apply

The two graphs are taken from the results of a trial in the present season, and indicate that 40 lb. of borax per acre applied broadcast has given the best yields and also satisfactory control of mottle heart. Although the measure of control of mottle heart was by no means complete even with application of 50 to 60 lb. of borax per acre, the results are of practical significance, for individual bulbs showed little severe infection with applications of 40 lb. of borax per acre and over.

Summary

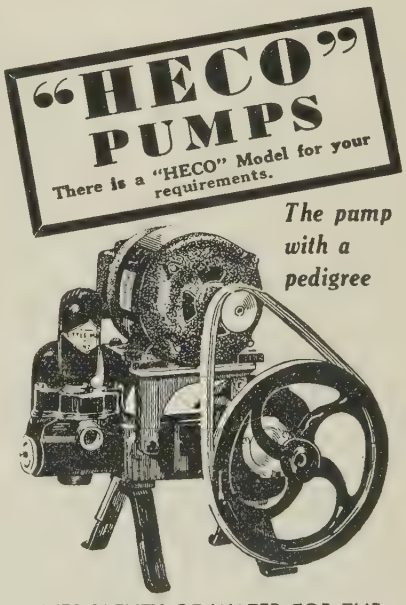
The following recommendations may be made with regard to the use of borax in the control of mottle heart of swedes and turnips.

(1) Broadcast 40 lb. of borax per acre shortly before or after sowing. If heavy rain follows the application, it is safest to repeat the topdressing.

(2) Use heavy rather than light rates of seeding.

(3) Wilhelmsburger and Vilmorin swede varieties may be used where the disease is known to be severe.

However, the problems as outlined earlier are by no means completely



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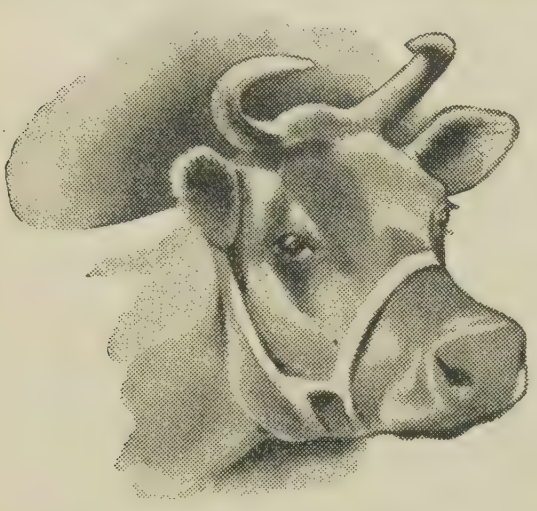
solved, and further intensive work is needed to supply the answer to a number of practical questions in connection with the use of borax in controlling the disease. The production of a compound of boron which can be safely drilled with the seed to control brown heart without affecting germination should be the first objective.

The acreage annually devoted to turnips and swedes and the widespread and often severe losses caused by the disease undoubtedly justify the carrying out of additional research. Under the present conditions, however, there are more urgent problems which demand immediate attention, and future intensive work on the problem has therefore been postponed in the meantime.



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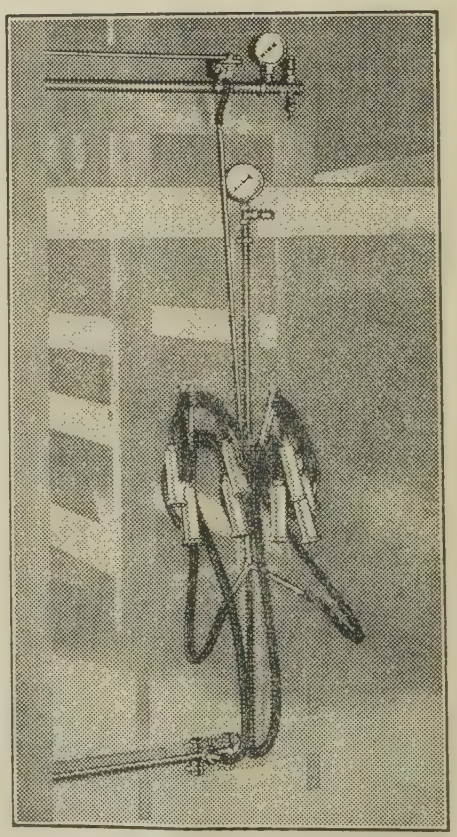

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PAMPAS GRASS ON HIGH COUNTRY

Following last month's article on the establishment of pampas grass, the following articles give farmers' experiences with the plant as a valuable producer of winter fodder.

By
W. T. BROWN,
Fields Instructor, Taumarunui.

MUCH has been written in recent years about pampas grass, but most of these articles have been confined to pampas as a winter feed on low country or on heavy moist plains. This plant, however, will thrive quite well on hill country where conditions are hard and soil conditions not of the best, but on the harder soils plants take a year or two longer to establish.

Sheepfarmers need to keep fairly large herds of cattle to control secondary growth on high country, and, as few of these men are fortunate enough to have good hay paddocks, the question of feeding these cattle over the winter is a difficult one.

One of the following methods is usually adopted:—

(1) Buying hay and feeding the cattle over the winter.

(2) Starving the cattle over the winter, with many deaths in the late winter and early spring.

(3) Selling the cattle on a poor market in the autumn and restocking at high prices in the spring.

(All these practices are costly and uneconomic.)

Or

(4) Growing feed on which to winter stock.

It is with this fourth practice that pampas grass can be used to advantage, and it has proved itself to be a very economic and profitable species for this purpose.

Pampas grass will grow on most of the high country soils, and, if given reasonable treatment for two years, will become established and produce a fair quantity of feed in the third.

Fig. 1.—Pampas grass in rough country.

Planting Out

Successful growers in the Southern King Country have had greatest success by buying seedling plants and planting them out in a nursery bed for the first year. The plants are planted out in rows 1 ft. apart and 1 ft. between the plants.

In the spring of the second year, after the frosts are over, the plants are wrenched out of the nursery bed and planted out into the prepared beds in the permanent site. The preparation usually given is to remove about 2 feet square of turf and cultivate the soil to the full depth of the spade during the winter about two months before planting out the young plants.

Fig. 2.—A three-year-old plant in similar country to Fig. 1.

The holes should be 6 feet apart and in 6-foot rows.

After planting out, the young plants should be kept clear of grass and rubbish for two years. This clearing needs to be done two or three times during the first summer and twice during the second. Several methods of clearing are used. One is to slice the

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turf round the plants with a spade and turn it over. Another is to clear away the grass with a reap hook, slasher, or scythe, but the best I have seen is to scythe the whole area and collect the surplus grass for hay.

In the second year, some farmers have fed off the area with calves, instead of clearing away the grass. This practice will not kill the plants, but is not recommended, as the check given to the young plants makes the difference of at least a year longer before the area is ready to carry full-grown cattle. It has been found that plants established for four years and fed off in the second year are not as robust and do not throw as much feed as three-year-old plants which have not been fed until the third year.

Another practice which has given good results is to split up old plants into smaller sections, with three or four crowns each and with a fair portion of roots, and to plant these sections straight out into the prepared holes. With this method of planting it is found that the outer sections give much better results than sections from the centre of the old plants.

Carrying Capacity

An example of the winter carrying capacity of areas established by the nursery method is provided by the performance of the following three stands:—One acre of five-year-old plants last winter fed 30 bullocks for six weeks. These bullocks were allowed one hour per day in the plantation, and were in good condition at the end of the period. This stand is in very high country, some of which is dry hard papa and sandstone country, while the lower portions are fairly wet due to seepages.

On another small area fourteen seven-year-old plants, with no other feed at all, fed six four-year-old steers for eight days.

On the same farm, using three- and four-year-old plants, this farmer wintered 21 calves on one acre of pampas and some hay from July 17 until the beginning of September. It is interesting to note that half of this stand is the area which was fed off as two-year-old plants, and that to-day, as four-year-old plants, they are no further ahead than unfed three-year-plants on the same area.

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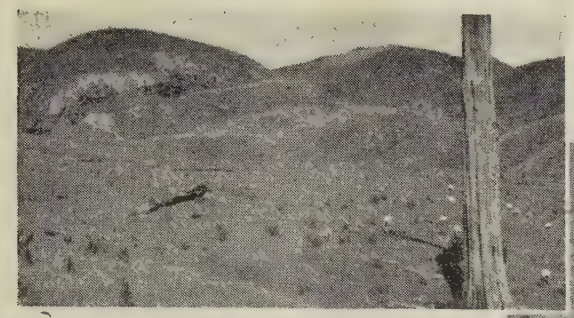
Another interesting farm is one on which there are two larger areas of plants which have been fed off with sheep. One of the blocks is 15 acres and the other 14 acres, and the plants are mostly two-year-old plants, along with five acres of four-year-old plants. During last winter these two blocks were fed off with an average of about 300 sheep for five weeks. At this time the bigger plants were only half eaten, but the sheep had to be removed to save the smaller plants from excessive grazing. The farmer estimates that this area would carry at least 600 sheep for 10 weeks if the plants were all five years' old.

Although these figures are not conclusive, they at least show that pampas grass produces a large bulk of good winter fodder, and, as these plantations grow older and plants grow bigger, the carrying capacity of these areas should greatly increase.

Pampas Grass on Hill Country



Above.—General view of type of country where pampas grass is showing promise.

Left.—Small plantation of pampas grass 18 months from planting in a key position on farm for winter feeding.

Right.—Individual plant in plantation shown in Fig. 2 indicating 18 months' growth.

ONE of the problems confronting the hill country sheep farmer in the north is the control of growth during certain periods of the year in such a way that the pastures remain sound sheep pastures. This growth may be an excess of grass and clover or may be of the bracken fern type, and to enable a satisfactory degree of control to be exercised it is necessary to run a certain number of cattle. On some properties the running of these cattle may result in direct profit, but on others the cattle beast must be

By

J. F. SHEPHERD,
Fields Instructor, Hamilton.

viewed merely as the "agricultural implement" of the hill country, and if the farmer "breaks even" with his cattle financially, or even suffers a little direct monetary loss, the indirect gain he gets through his sheep being depastured on controlled pastures warrants the cattle being run. In a general way it can be stated that cattle are an essential feature of successful hill country sheepfarming.

A further problem associated with the running of cattle is that during the period of maximum growth (spring and early summer) a certain number are required in order to cope with the growth, and unless this stock can be carried through the winter they have to be sold at sacrifice prices in the autumn and more bought in at high prices in the spring. This has resulted in most hill country properties being understocked with cattle at the period when they are most required, so that any system of management that will result in a larger number being wintered must result in better spring and summer pasture control, which will in turn result in better returns from sheep.

Faced with this problem a few years ago, Mr. J. B. Vowles, of Te Mata, considered pampas grass as a means towards the wintering of an increased number of cattle, and planted an acre as an experiment. The country is undulating to hilly and of a heavy volcanic clay type, which dries out badly during the summer months. The land was originally mixed bush, but now carries a fair pasture of the browntop-danthonia-cocksfoot type.

Planting was done during the spring of 1939 with seedling plants from

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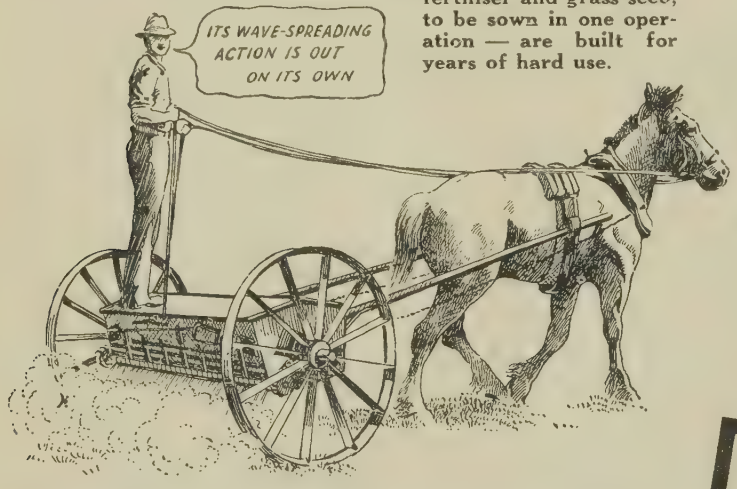

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Whangarei. The holes were dug well ahead of planting to allow as much weathering of the sod as possible, and a small handful of fertiliser was mixed with the soil at the time of planting. A dry spell was experienced during the following summer, necessitating watering twice at intervals, and the result was that 90 per cent. of the plants survived.

The accompanying photographs taken last February indicate that pampas grass, when established, will assist considerably in carrying stock during the winter and early spring when cattle feed is particularly short on this class of country. The pampas is to be fed off this winter, and it will be interesting to note the recovery and annual growth following grazing.

Successful Establishment Needs Care

By

E. H. ARNOLD,
Instructor in Agriculture,
Dargaville.

ACCOMPANYING the first extensive plantings of pampas grass for fodder purposes were many disappointing strikes and failures, and decided reaction against further plantings followed. A careful stocktaking of the position revealed that the establishment of a pampas grass plantation was not quite so simple or so uniform as was once thought. Climatic conditions, time of planting, soil quality, use of fertilisers, preparation of the ground, and the actual method of planting are all single or combination factors influencing success or failure in obtaining a satisfactory strike. However, where pampas grass is successfully established, information is sufficient to show that it is useful for fodder purposes on the richer flat and easy lands. Further, immense possibilities can be visualised for its similar use on hill country where hay and ensilage cannot be saved.

It is on this latter type of land that less attention is usually given to certain important factors which accompany successful establishment. The first two illustrations are of a pampas grass area planted some years ago. More by accident than by design, two important aspects of management and planting stand out. The pampas was planted out among a rank growth of grass, fern, and blackberry. A hard fight for existence among the rough-age occurred, and the plants did not thrive. Then, before the pampas plants had made sufficient top and bottom growth, cattle grazed the area with the exception of a small piece cut off by a deep drain. The plants which were grazed down closely before they were firmly established did not recover and were smothered by the fern and blackberry. Two factors in combination brought about the failure of this plantation.

Left.—A general view of a pampas grass plantation failure. The fern and blackberry have completely smothered the plants, which were also grazed hard down before becoming firmly established. *Right.*—A closer view of the plants seen in the background in Fig. 1. A deep drain prevented stock from access to these plants.

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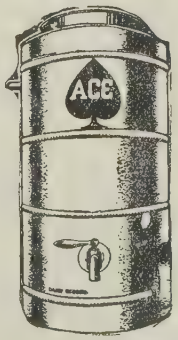

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In successful plantations, one of which is shown in Fig. 3, the cleaning and keeping down of the rough growth between the plants until they are well established proves worthwhile. Further, grazing is harmful until the pampas plants have attained size and root development. When a mixed-age plantation is grazed the replants used to fill the gaps never make the recovery or attain the size of those plants successfully established at the time of the first planting.

Depending upon the soil fertility and whether seedlings or cuttings were used, it may be three or even four years after planting before it is safe to graze the newly-established pampas plantation. The less fertile the soil, the slower will be the establishment and the longer the period before the initial grazing. Just as poor soil will not grow good pasture unless top-dressed, so a poor soil untreated will not grow good pampas grass.

A successful pampas grass plantation. Rough growth was removed during the period of establishment. The area is summer-grazed by sheep, and the seed heads are removed each year.

Palatability of Pampas Grass

By
J. E. BELL,
Instructor in Agriculture,
Auckland.

AT first approach, one wonders why cattle will eat such a plant as pampas grass, with its coarse, jagged-edged leaves. Having had some experience with the feeding of cattle on this plant, and after noting how it is relished by them, one is surprised to find on certain farms that the plant is entirely neglected by cattle.

Two such farms have come to my notice—one at Clevedon and one at New Lynn. On both of these farms pampas grass has been planted for fodder for dairy cattle.

Fig. 1 shows pampas grass on the New Lynn farm which has been cut back some time previously. The young, fresh growth on the plants is more succulent and more palatable than the old growth, but the cows were not tempted and refused to eat it.

Fig. 1.—Pampas grass which was cut back.

Strain appears to have little or nothing to do with the matter. The plantation, a portion of which is shown in Fig. 1, has been derived from several sources (at least three). At

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Fig. 2.—Pampas grass growing under good soil conditions.

Clevedon, pampas grass from another source altogether was planted.

Where pampas grass grows well and is eaten by stock—as it is nearly everywhere—it has proved a valuable addition to the stock larder. However, the doubt as to its palatability is demonstrated as a warning merely so that farmers will not expend much money and labour in the establishment of plantations until the palatability of the plant on their farms and for their stock has been determined by small trial patches.

Another warning note with regard to pampas grass is that trials have shown it to be as particular as any plant in regard to soil conditions. For quick establishment it requires a rich, moist soil, reasonably well drained. On poorer and drier soils, it is slow to establish and the percentage of deaths is high.

Fig. 2 shows pampas grass growing under good soil conditions. On this farm pampas grass is readily eaten by stock which, however, have preferred the *Glyceria aquatica,* which can be seen closely grazed in Fig. 2 at the foot of the pampas grass which remains untouched. It is quite possible that the position would be reversed on other farms and with other stock, with stock preferring pampas grass to *Glyceria aquatica,* which is, after all, not the most palatable of the swamp grasses.

Value of Cultivation

IN the Whakamarama district there is a striking example of the value of inter-cultivating pampas grass in its early stages.

The farmer concerned planted out a small area several rows wide, all plants being planted on the same day and with the same manurial treatment. He planted potatoes between the rows of pampas on half the area and left the other half untouched. The potatoes received a fair amount of cultivation during their growth, while the area with no potatoes received none.

Now, eighteen months after the pampas was planted out, there is still a distinct difference between the two parts of the pampas area. The part in which the potatoes were grown is considerably more advanced than the other half, and the plants are more vigorous and are throwing double the feed.

—*A. V. ALLO, Instructor in Agriculture, Tauranga.*

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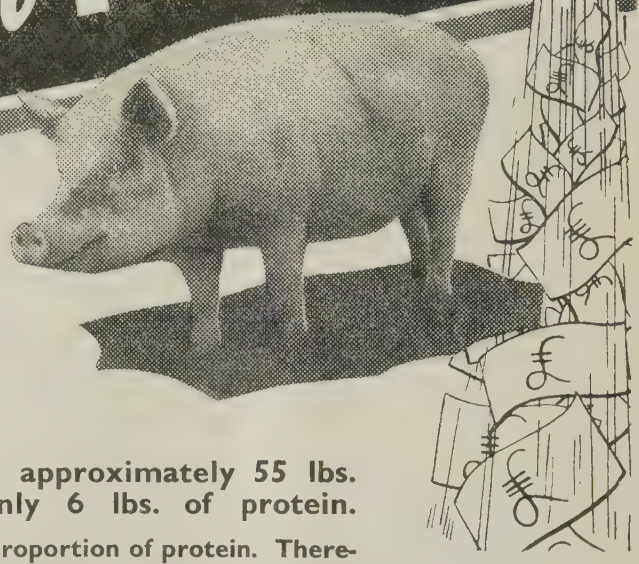

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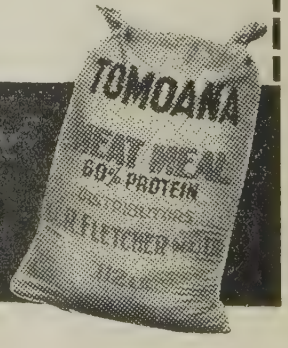


MAIZE GROWING IN NORTH AUCKLAND

Renewed interest has been displayed in growing cob-maize during the past three years in the North Auckland district, particularly for carrying store pigs through the winter in a thriving condition. In this article the author discusses suitable soils, methods of sowing, rates of seeding, choice of varieties, fertilisers and harvesting.

Above.—The maize crop in North Auckland.

Left. — Pigs wintered on maize and meat-meal. A group of pigs at the Dargaville Demonstration Farm. The photo was taken in August when, after three months' feeding, each pig had consumed 3 bushels of maize and 45 lb. of meat-meal.

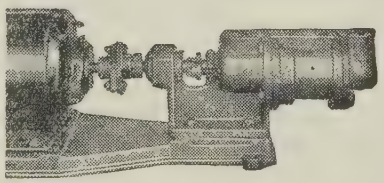
By
E. H. ARNOLD,
Instructor in Agriculture,
Dargaville.

MAIZE was one of the first crops introduced into North Auckland by the early missionaries. Half a century after its introduction the total area devoted to this crop was 643 acres. In 1911, twenty-five years later, the area sown had increased to 2151 acres. Unfortunately, the next next quarter of a century saw only 603 acres sown, and of this acreage, 213 acres were saved for grain. During the past three years renewed interest has been displayed in growing cob-maize, particularly for carrying store pigs through the winter in a thriving condition. Thus, in the 1939-40 season the crop amounted to 1060 acres, of which 355 acres were harvested for grain.

Scope in North Auckland

Although certain areas in North Auckland are harvested for the sale of the grain, it cannot be claimed that maize is as certain a commercial crop as in the East Coast districts. Climatic conditions are somewhat less reliable, and the late spring rains maintain the heavy alluvial soils in a wet condition, delaying and reducing much of the essential preparatory cultivation. A wet summer results in intensified competition from weeds and paspalum, while autumn rains and the almost complete absence of frosts during the late autumn prevent complete ripening of

Typical alluvial flats in the north. Such country will grow excellent maize crops.



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the cobs, causing rotting of the grain in the cobs before picking and lowering its quality.

When conditions are entirely suitable, high yields of more than 100 bushels per acre have been, and still will be, obtained. However, where farmers attempted to grow large commercial areas of the crop they soon found that it did not pay, and quickly realised that greater monetary returns could be obtained from dairying off a good ryegrass-paspalum-white clover pasture on the same land.

Valuable for Pigs

The maize crop can be widely grown on farms where pig-keeping is undertaken in conjunction with dairying. Feeding trials carried out during the past three years at the Northern Wairoa Experimental and Demonstration Farm, Dargaville, have shown that pigs fed on maize and meat-meal, with access to grass paddocks and provided with suitable housing to keep them off the wet land during bad weather, will winter in a thriving condition and be suitable to carry on to baconer weight when skim-milk supplies become available in the spring. Farm-grown maize will obviate the necessity for the disposal of light porkers and stores at unremunerative prices in the autumn and the subsequent purchase of costly stores in the spring. Where pigs are carried through the winter, an ample supply of maize in the cob makes all the difference between the mere existence and the growth of pigs, while fewer deaths will occur.

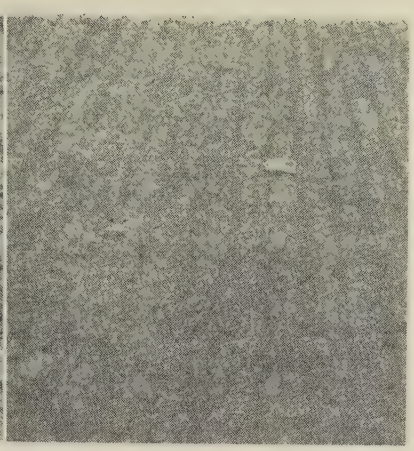
Other trials have demonstrated that maize is a valuable supplement for feeding both the sows and litters of those early May-June farrowings, when skim-milk is at a premium, until the flush comes away in the spring. Further, maize can safely be used to eke out the lessening skim-milk supplies of the late summer and autumn. Provided the amount of maize fed does not exceed 2lb. per pig per day, the quality of the flesh is not adversely affected. Fattening pigs fed in this way can still be called skim-milk-fed pigs and not maize-fed pigs.

The wintering of a store pig for three months requires 2 to 2½ bushels of maize and 45lb. of meat-meal. Thus, one acre of maize yielding 60 bushels of grain will be sufficient to winter successfully 20 store pigs, as well as to provide valuable home-grown feed for the breeding sows.

Suitable Soils

A deep, rich, friable loam well supplied with organic matter is ideal for maize, so that good crops can be obtained on the river flats so widely scattered throughout North Auckland. Good drainage is of supreme importance, for the crops, especially in the early stages, will not stand for even one or two days water lying on the surface, in the hollows, or even in the top-soil. Less fertile soils can be used for growing profitable, though not heavy, crops.

For pig-feeding, only a small area—one to one and a half acres on a farm where sixty cows are milked—is sufficient, and the fertility on such an area can well be increased by spreading the manure from the milking shed and the pig houses over the ground before ploughing. In fact, the ideal situation to grow such a crop is where pig runs have been in existence for some years, or near the milking shed where the manure has been dumped over many seasons. In both instances,



Left.—
Good cultivation is necessary—land ploughed while slightly too wet; soil dried out rapidly before cultivation could reduce the size of the clods.

Right.—
Rolling at the time when the clods are friable helps, but it does not break down the large, dried-out clods at the bottom of the photo.

the farmer can "cash in" on stored-up fertility.

Cultivation

Thorough cultivation is essential to ensure a full yield. Good seed, good land, and the liberal use of fertilisers are, to a large extent, wasted if the preparatory cultivation is not thorough. Deep and complete cultivation of the seed-bed is most necessary, and if this is done, unfavourable conditions which may occur later will not affect yields so much. An idea exists among some farmers that a well-prepared seed bed is not so necessary because of the large size of the seed of maize. No greater mistake can be made, for no amount of after-cultivation, important as this is, can make up for insufficient preparation of the soil.

Being comparatively shallow-rooted, especially in the later stages of its growth, maize requires a deep, well-worked seed bed, for it is mainly in this depth of worked soil that the roots are distributed and on which they depend almost wholly for the nourishment of the plant during later growth. The ground should, therefore, be ploughed as deeply as possible without turning over an undue amount of subsoil. This ploughing should be given in the autumn or early winter, and the ground allowed to lie in the "plough" and mellow down under the action of winter rains and possible frosts.

As soon as the land is dry enough in the spring, a second ploughing should be given to destroy weeds and make a good, clean seed bed. If this second ploughing immedaitely precedes sowing, it should not be so deep, as the seed bed requires a certain amount of firmness. Practical farmers on the heavy land of the North Auckland river-flats have found that it pays to delay the spring ploughing if the weather is at all wet.

One farmer who has spent a lifetime on these flats gives the following excellent advice. "Leave the land alone when it is wet, and also when it appears ready for ploughing. Get in and plough when it appears to be becoming too dry to work. Then the soil crumbles up freely and a really good seed bed can be prepared."

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The spring ploughing should then be followed up with thorough discing and harrowing to prepare the ground for sowing. A rolling, using the Cambridge roller, generally proves very beneficial after ploughing and before discing.

Overcoming Competition From Paspalum

Many farmers in the north are loath to crop even one acre for maize for winter feed for pigs because of the competition from paspalum in the growing crop, but if thorough cultivation has been done this is not at all serious. More trouble occurs from seedling paspalum plants growing from seed during late November and December than from existing old plants throwing up new growth. These seedlings can be dealt with by the inter-row cultivator or scarifier.

Established paspalum can be dealt with by careful preparatory cultivation. In this case, the late autumn or early winter ploughing is best done as a skim-ploughing. The ground is then left lie over winter, and three weeks before the spring ploughing, which should be at normal depth, it is disced thoroughly. The cut-up material is then buried under the furrow. If the land is too rough for skim-ploughing, the first ploughing should be as deep as possible, followed by a shallow spring ploughing. This leaves the old plants well buried out of the way.

Control of paspalum requires good ploughing. A skim-coulter attachment plus immediate discing in the direction of the furrow would overcome the invasion shown above.

Where only one ploughing can be given, perhaps the best method is to plough with a long mould-board plough with a skim-coulter attachment. The skim-coulter takes off part of the top edge of the furrow, turns it down to the bottom, and prevents the paspalum growing up between the furrow slices. Discing follows immediately, so that in this manner no light at all can reach the paspalum plants. If the land is ploughed in the ordinary way, the paspalum comes up between the furrow slices.

Time of Sowing

Most of the maize-growing soils of North Auckland are not early soils. Consequently, although the first crops may under some conditions be sown from the first week of November, delayed cultivation—and this, as already mentioned, may prove necessary and beneficial—may result in the crop being sown as late as early December. This is no handicap, provided cultivation is thorough.

Methods of Sowing and Rates of Seeding

The maize drill is by far the most satisfactory method of sowing. Unfortunately, there are few maize drills in North Auckland, and the small areas sown on each farm do not justify the purchase of a new machine. Small areas are often ploughed in, the seed being dropped by hand behind the plough in every fourth furrow. The ploughing should be shallow so that on the heavy soils not too much covering is placed over the seed. Some farmers have successfully sown maize by use of the discs. These are so worked that the seed is dropped in the shallow furrow left between the two gangs; the seed is dropped by hand, and the next time along, as for double discing, it is covered by the soil turned over by the outside disc. Another method is to use a sledge with permanent or temporary runners spaced the distance apart at which the rows are placed. Seed is dropped by hand and covered by harrowing. When only half an acre is planted, the use of a line and a spade or hoe is probably sufficient.

In all cases where the maize drill is not used, the ground must be well prepared, in a good tilth, and free from

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weedy material. After sowing, a rolling, followed by a light harrowing, will prove very beneficial. Broadcasting for cob-maize always proves very unsatisfactory.

For grain, rows are usually placed 3 to 4 feet apart, but they must be wide enough for the passage of the horse-hoe, and especially for the swingletree, which, if the rows are too close, will damage the young plants. The plants can average 12 to 18 inches apart in the rows, the closer planting being adopted for richer soils. Where the soils are poorer and drier, it often proves profitable to plant on the square or check system, with the rows 3½ feet apart and the plant, or rather groups of plants, every 3½ feet apart. This method will allow inter-cultivation both ways.

If the crop is planted by the maize drill, 10 to 12 lb. seed will be sufficient, while any of the other methods will require an additional 3 or 4lb. of seed per acre. As the crop in the north is liable to be attacked when a few inches high by the caterpillars—an early brood of the New Zealand cutworm or army worm—extra seed is worth while; the surplus plants may be cut out later during the hand-hoeing of the crop.

Control of Caterpillars

At the end of November or early in December, the young maize crops are subject to attacks of caterpillars, which cut off the young plants about ground level. This caterpillar is of the first batch of the season of the New Zealand army or cutworm, *Cirhpis unipuncta*. If the attack is severe or is neglected in the early stages, it will be found necessary to replant the crop. The attack lasts only for about ten days, and crops above 6 to 7 inches high are not affected. The first consideration is to get the crop in early and past the time of attack. If the period of susceptibility coincides with the presence of the cutworms, the use of ample superphosphate when sowing will reduce the damage by rapidly increasing the rate of growth of the young seedlings.

When the first signs of an attack are observed, the use of poisoned bait will be found invaluable in preventing the spread, thus avoiding the necessity of resowing the crop. The formula is—

Paris green or white arsenic, 1lb.
Bran, 24lb.
Water, up to 3 gallons.
Salt, 10oz.
Molasses, 3-4lb.

Although white arsenic is less attractive and effective, it may be difficult to obtain supplies of Paris green. The bran and Paris green or white arsenic are mixed dry with the salt, while the molasses is mixed with the

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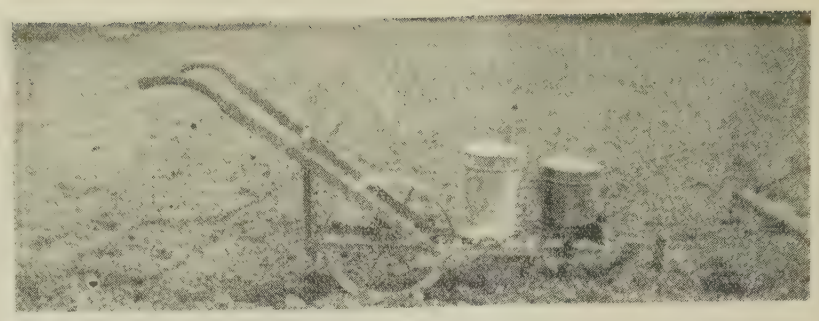
water. When the mixings are thoroughly complete, the solution is added to the mixture of bran and poison. Only enough solution is used to make the bait crumbly and not over-moist. The bait is then scattered along the rows in the late afternoon so that it is fresh for the evening, which is the time when the caterpillars feed. By this method some 40lb per acre are sufficient. The treatment can be repeated for several evenings. It should be remembered that the bait is poisonous, and should be kept out of reach of stock.



The single-row maize drill.

Hand-sowing the maize crop. Quicker work is accomplished by two men, one using a spade, the other dropping the seed.

Choice of Varieties

All maize varieties differ not only in growth and cob characteristics, but also in the time taken to reach maturity. High-yielding varieties require a long-growing season, and quick-maturing varieties are generally poor grain-producers. The alluvial soils of North Auckland are not early soils, and unfavourable ripening and harvesting conditions may occur in the autumn, so that the normal maize-growing season in the north is not a long one. The variety which can be expected to do well is one which matures early after a short growing season and yet yields heavily at the

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Variety.	Origin.	Yield in bushels per acre.		
		1937-38.	1938-39.	1939-40.
Early Butter	Bay of Plenty	55.1	..	..
American Early ..	" " "	57.4	..	..
Keams Rough Dent ..	" " "	48.1	..	..
Otumoetai Horsetooth	" " "	64.9	..	..
Golden Glow	New South Wales	48.8	39.1	34.1
Willingrove	" " "	64.3	62.6	..
Iowa Silvermine ..	" " "	64.5	40.3	..
Funks Yellow Dent ..	" " "	58.6	35.6	..
Hickory King	" " "	69.0	40.3	..
Leaming	" " "	..	58.9	..
Boone County White ..	" " "	..	48.1	..
Johannson's White ..	Dargaville	69.7	58.2	93.1
Prairie Queen	Ruawai	60.8	45.9	94.6
90 Day	"	..	51.1	..
Quebec No. 28	America	..	32.8	39.0
Longfellow	"	..	30.6	30.4
Salzers	"	..	39.7	52.6
Wisconsin	"	..	26.7	53.3
White Cap Yellow Dent	"	..	20.3	31.1
Pfister Hybrid No. 360	"	..	..	85.1

same time. Much of the seed maize sown is crossed with other varieties. It is of little use for a farmer to save his own seed unless he grows only one variety, and unless this is isolated from crops of other varieties by a distance of at least half a mile.

During recent seasons the Northern Wairoa Experimental and Demonstration farm has carried out extensive trials to procure suitable pure varieties for North Auckland. The results are tabulated in the above table.

Taking into account all relative factors, as well as the yield, the Demonstration Farm decided to concentrate on the variety, Johannson's White. A crop of 3½ acres was grown during the 1940-41 season, and a yield of 108.6 bushels per acre has been obtained. Selected seed of this variety will be available to farmers this coming planting season. If the farmer does not favour a white variety, Prairie Queen is recommended. The next best appears to be 90 Day, provided a pure line is obtainable. Seed of other suitable varieties is difficult to procure in New Zealand.

Fertilisers

Maize makes a heavy demand on the plant food of the soil. It has been stated that on rich, very heavily fertilised soil in the United States of America, yields of up to 255 bushels per acre have been produced. While it is impossible to approach this figure in North Auckland, definite evidence exists that the better the crop is fertilised, provided cultivation is thorough, the higher will be the yield. Farm practice varies from straight superphosphate to mixtures of superphosphate, bonedust and blood and bone, while some farmers use one of the many proprietary maize mixtures available.

A manurial trial carried out on the Dargaville Demonstration Farm produced the following results:--

Plot	Treatment	Manure applied (Cwt. per ac.)	Yield (Bushels per ac.)
1	No fertiliser		49.5
2	Superphosphate	4	68.7
3	Superphosphate	2	
	Blood and bone	2	68.7
4	Superphosphate	4	
	Sulphate of ammonia	1	86.4
5	Superphosphate	4	
	30% potash salts	1	86.8
6	Superphosphate	4	
	Sulphate of ammonia	1	
	30% potash salts	1	84.0

It is clear that maize requires ample superphosphate and some nitrogen. When the soil is rich, as is the case

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after an old pasture, 4 cwt. of superphosphate per acre gives excellent results. The crop of Johannson's White yielding 108.6 bushels per acre received this treatment. When fertility is not so high, the addition of nitrogen is worth while. Sulphate of ammonia

Left.—Maize requires good drainage.

Right.—A young vigorous crop of maize.

Below.—A good maize crib is essential, and can be placed at the piggery. For most farms a smaller crib with vertical sides is as good as that illustrated.

is recommended, if available, while dried blood or blood and bone may be used as a substitute.

The Growing Crop

Although thorough preparation of the soil is important, it is no more important than thorough after-cultivation. If heavy rain falls soon after sowing, a light harrowing, especially on heavy soils, loosens the surface and destroys weed seedlings. Even when the crop is 5 or 6 inches high, a har-

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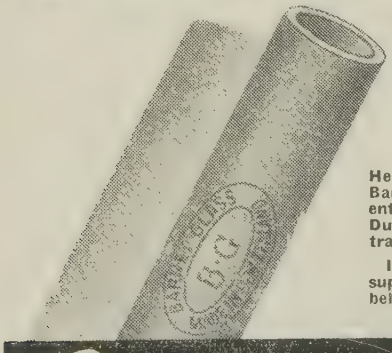

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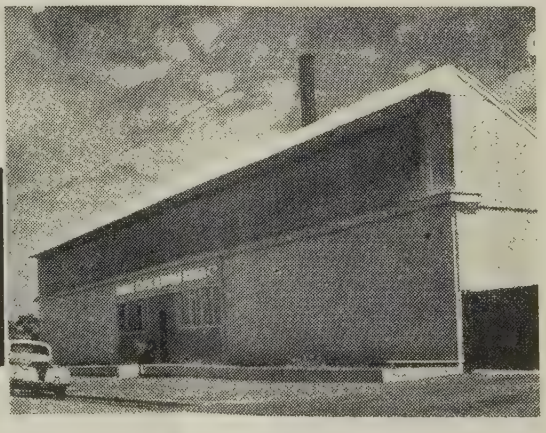

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rowing does little harm to the maize plants. A bright day should be selected as the plants are soft and brittle on a cloudy, cool day, or early in the morning, but are quite tough and supple in the heat of the day. The harrow should be kept free from clogging rubbish, which would cause many plants to be torn out. Such a harrowing saves a great amount of expensive cultivation and hand-hoeing, as it destroys a big crop of young weeds and paspalum which may become troublesome later.

The inter-row horse cultivator or scarifier should be used every week or ten days for as long as it is possible to drive the horse and cultivator between the rows. If no light harrowing has been given, it will be necessary to hand-hoe between the plants within the rows. This removes weeds not reached by the horse hoe, and if the crop is too thick, surplus plants are removed at this time.

The depth of the cultivation should be regulated according to the height of the crop; as maize plants grow in height, their roots more nearly approach the surface. During the early stages of growth cultivation may be given to a depth of 4 to 5 inches, but this must later be reduced to 2 or 3 inches, and must be kept away from the plants themselves, or else a large number of valuable feeding roots will be destroyed.

The question is often asked, "Should the suckers be removed, with the idea of increasing the yield and incidentally providing a little green fodder for stock, especially pigs confined to pens?" Many a crop yielding exceedingly well has been found to have an abundance of suckers, but trials carried out overseas indicate that the value of the suckers is offset by the cost of their removal, and that the yield of the crop is reduced by desuckering.

Harvesting The Crop

If part of the crop is required for the immediate feeding to pigs, picking may begin during April or May. The remainder should be left until the cobs are ripened, but not long enough into the winter to allow the grain to rot because of frequent rains. A crop is usually fit to pull when about 80 per cent. of the stalks are quite yellow. The cobs are snapped off by hand, husks removed, and they are then carted to the maize crib to store and dry until required for use.

If an acre of maize is grown every year for wintering pigs it will pay to construct a permanent crib, which need not be elaborate. The floor is best constructed of close boards, and the sides and ends, including doors, of 3in. by 1in. battens spaced 1½ inches apart. The gable roof of iron is best carried well over the sides. The whole crib should be up off the ground on piles, the tops of which are fitted with tin rat shields. A suitable-sized crib for a small crop of one acre yielding 60 bushels per acre would require the following internal masurements:—5ft. wide, 6ft. long, and 6ft. high to the eaves. The size required for larger areas can easily be calculated from these measurements.

Slaughterings of Stock

THE following returns of slaughterings of stock at meat-export slaughterhouses and abattoirs for the two months, May and June, 1941, have been compiled by the Livestock Division:—

District	Cattle	Calves	Sheep	Of which Ewes were	Lambs	Swine
North Island.						
Meat Export Slaughterhouses—						
Auckland	61,212	14,290	26,088	10,263	104,789	62,653
Poverty Bay-Hawke's Bay	23,399	538	29,243	2,974	184,052	6,562
Taranaki-Manawatu	33,242	1,456	9,973	1,271	133,264	30,523
Wairarapa-Wellington	19,954	519	17,309	3,189	121,749	5,821
Totals	137,807	16,803	82,613	17,697	543,854	105,559
Abattoirs	20,897	6,224	80,993	40,969	10,707	21,211
North Island Totals	158,704	23,027	163,606	58,666	554,561	126,770
South Island.						
Meat Export Slaughterhouses—						
Nelson-Marlborough	313	11	5,361	2,101	62,764	2,981
Canterbury	2,885	2,045	149,293	119,404	383,769	6,099
Otago-Southland	2,630	3	137,969	128,172	466,846	1,542
Totals	5,828	2,059	292,623	249,677	913,379	10,622
Abattoirs	9,960	2,230	47,985	27,456	5,573	8,221
South Island Totals	15,788	4,289	340,608	277,133	918,952	18,843
Dominion.						
Meat-expt. Slaughterhouses	143,635	18,862	375,236	267,374	1,457,233	116,181
Abattoirs	30,857	8,454	128,978	68,425	16,280	29,432
Grand Totals	174,492	27,316	504,214	335,799	1,473,513	145,613
Same Period, 1940—Meat Export Slaughterhouses and Abattoirs	229,058	35,974	789,319	528,670	1,394,099	150,477
Same Period, 1939—Meat Export Slaughterhouses and Abattoirs	157,309	42,792	507,775	274,931	1,415,167	105,705

Slaughterings of Pigs

The 36,947 pigs slaughtered in meat export slaughterhouses and abattoirs during June were distributed in weight ranges approximately as follows:—

Under 60 lb.	1,565
60-120 lb.	27,882
121-160 lb.	4,144
161-180 lb.	446
Over 180 lb.	961
Sundries	1,949

The grading of porkers is 86 per cent. first quality and 14 per cent. second quality, and of baconers 77 per cent., 18 per cent., and 5 per cent. of prime 1's, prime 2's and second quality respectively.

In the different weight ranges of baconers, the quality is as follows:—

121-160 lb.	79%, 17%, 4% of P1, P2 and 2nds.
161-180 lb.	60%, 31%, 9% of P1, P2 and 2nds.

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An advertisement authorised by the Reserve Bank of New Zealand, Wellington, 1st August, 1941.

MOLASSES—A VALUABLE STOCK FOOD

For many years molasses has been widely used by New Zealand farmers and has proved a most valuable concentrate, particularly in the winter feeding of dairy cattle and pigs. It has also been used extensively as a supplementary feeding-stuff when sheep are being wintered on dry feed.

By
G. A. HOLMES,
Organiser of Farm Supplies

Cattle feeding from solid molasses.

IN pre-war years molasses was imported principally from Fiji in tanks on specially constructed steamers. The molasses was discharged into store tanks at Auckland, and was distributed from that centre in 45-gallon drums, in barrels, or in 4-gallon cans. The average pre-war price was about £6 per ton, and at this figure it could be considered a most economical concentrate feeding-stuff. Shortly after the outbreak of war, however, supplies from Fiji were diverted, and it has been necessary to import molasses in drums either from Australia or from the Netherlands East Indies. This has involved an increase in the retail price to about £12 per ton at main ports, this price including the cost of the drums.

The average annual consumption in pre-war years was approximately 6000 tons, but the increase in costs and difficulties of supply at present have considerably reduced the quantity used. One difficulty experienced by exporters in the East Indies has been the shortage there of steel drums, which, of course, cannot be returnable to an overseas shipper.

Showing how the tins of solid molasses are opened.

What Is Molasses?

Molasses is a by-product of the sugar refining industry, the material used in New Zealand being entirely derived from sugar cane. In the process of manufacture cane sugar is crystallised out from the cane juice by evaporation, but there always remains a dark "mother liquor" from which it is impossible to crystallise any further sugar. The "mother liquor" is drained away from the sugar, and, after concentration, forms what is commercially known as molasses. A good sample should not contain more than 24 per cent. of moisture and not less than 55 per cent. of carbohydrates, these being principally in the form of uncrystallisable sugars.

The high percentage of sugars contained in molasses makes it valuable to livestock as a source of heat and energy in a quickly available form. Molasses is comparatively low in protein-content, and on that account is best fed in conjunction with materials which contain a high percentage of protein, such as skim-milk in the case of pig feeding, or lucerne or clover hay in the feeding of dairy cattle.

A good sample of molasses should contain over 12 per cent. of mineral matter, principally salts of calcium, magnesium and potassium, and it is considered that these being present in organic combination are therefore in a form readily available to the animal. It is for this reason that molasses is recommended as a preventative of mineral shortage, which is a contributing factor in certain common ailments of stock.

For Dairy Cows

In feeding dairy cows molasses may be used in a number of ways. The commonest method is to sprinkle it diluted 1:2 or 1:3 with water over the hay. It is particularly valuable in the case of hay which has become badly weathered during harvest-time or which has become musty in the stack. With such fodder, the addition

Secure the Condition of Your Stock with

JAVA MOLASSES

Java Molasses is a natural food that acts as a tonic as well as a laxative. It is a source of some of the essential vitamins.

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Every particle is of highest dependable quality, and carefully planned to yield a higher average of essential foodstuffs!

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AUCKLAND WANGANUI CHRISTCHURCH DUNEDIN

of molasses increases palatability and digestibility. In the case of musty hay, a thorough soaking with molasses and water prevents the dust from having undesirable effects.

From 1 lb. to 3 lb. per day may be used as a ration for dairy stock supplementing hay or chaff, either with or without roots. Besides its actual value as a foodstuff and as an appetiser, molasses is of benefit to any stock on dry feed as a laxative, this being particularly necessary in the case of sheep which have to be wintered on chaff or hay only.

For Pigs

Because of its high energy value, molasses has been found very suitable in the wintering of store pigs, when it may be fed diluted in the proportion of 3 lb. per gallon of water as a supplement to skim-milk, grain, roots, or meat-meal. It is a common practice, also to add molasses to skim-milk, whey or buttermilk which is pumped out through pipes to pig troughs. This has the valuable function of keeping the pipes in a clean and sweet condition. An alternative method is to follow the process of pumping milk through the pipes by pumping through a few gallons of molasses mixed with water.

High Quality Silage

A noteworthy development since the outbreak of war has been the increasing use of silage in Britain to replace much of the feeding supplies which were formerly imported. Investigations have been carried out into the best method of preservation of grass silage, and it has been demonstrated that the addition of molasses has several beneficial effects. The molasses is mixed with about three times its volume of water and sprinkled over the green fodder as it is being stacked or spread in the silo; approximately 30 lb. of molasses per ton of green fodder is necessary.

In the production of silage preservation is effected by the development of lactic acid from the sugars contained in the fodder, the higher the percentage of sugar the more rapid and even is the production of lactic acid. For this reason, green material rich in sugar, such as green maize, makes better silage than material rich in protein, such as young grass and clover. When using the latter type of green material for silage, the addition of molasses results in a much more satisfactory fermentation and gives a silage which has a sweeter smell and a higher palatability.

Up to the present, this system has not developed to any extent in New Zealand, but no doubt, with further experience, the use of molasses will become more general by farmers who make silage.

Solid Molasses

An interesting recent development has been the importation of molasses in the form of a solid block weighing approximately 56 lb. Molasses is produced in this form by evaporating the liquid molasses under low pressure and running the material while still hot into tins. It is probable that the scarcity of steel drums in countries where molasses is produced may necessitate the preparation of larger quantities of it in the form of solid blocks.

Molasses in the solid form is somewhat less convenient to use for feeding, as it is necessary to mix the molasses with water, and the blocks can be diluted only by the use of boiling water. They may, however, be placed out in the paddocks in the same way as blocks of stock lick.

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Arthur Yates & Co., Ltd.

Whangarei : AUCKLAND : New Plymouth

Pedigree Sow Records

Contributed by the LIVESTOCK DIVISION.

OF the 58 sows recorded for the quarter ended 31st May, 1941, 42 had litters sufficiently good to be included in one of the five grades set out below:—

Grade.	Litter Weight.	
	At 3 Weeks.	At 8 Weeks.
1	120 lb.	360 lb.
2	100 lb.	300 lb.
3	90 lb.	270 lb.
4	80 lb.	240 lb.
5	70 lb.	210 lb.

THE following table sets out the performance of each breed as an average for all sows recorded during the quarter:—

Averages.

Breed.	No. of Sows.	No. of Pigs per Litter.		Litter Weight at		Weight per Piglet.	
		Born.	Weaned.	3 weeks.	8 weeks.	3 weeks.	8 weeks.
Berkshire ..	23	9.5	7.5	84.7	269.3	11.3	36.0
Large Black ..	9	9.9	7.7	84.4	259.1	11.0	33.8
Large White ..	6	10.7	7.0	89.3	274.5	12.8	39.2
Tamworth ..	20	9.0	7.4	88.9	297.5	12.3	40.3

In the following list the owner's name and address are given, followed by the herd book numbers of the sire and sow, the weights at three and eight weeks, the number of pigs born and weaned, and the grade of the litter.

Berkshires.

Owner's Name and Address.	Herd Book No. of—		Litter Weight (lb.)		No. of Pigs		
	Sire.	Dam.	3 weeks.	8 weeks.	Born	Weaned	Grade of Litter
Burmeister, O. P., Kairanga R.D., Palmerston North ..	12859	15084	51	138	9	5	—
Burmeister, O. P., Kairanga R.D., Palmerston North ..	16616	16412	41	97	9	4	—
Crawford, H. O., Aoroa R.D., Dargaville	15521	13463	103	302	12	9	2
Crawford, H. O., Aoroa R.D., Dargaville	15521	12826	99	287	10	8	3
Ellerm, O. C., Sanson R.D., Palmerston North	14949	14082	85	312	8	6	4
Ellerm, O. C., Sanson R.D., Palmerston North	14949	16091	112	360	9	9	2
Kati Kati Pig Club, c/o E. J. Whyte, Park Rd., Kati Kati	12802	15596	112	365	13	11	2
McCullough, R., Patetonga	15915	15544	60	197	14	5	—
Manutuke Pig Club, c/o R. K. Hepburn, Manutuke ..	16310	15329	91	296	8	7	3
Motukarara Pig Club, c/o W. C. Millar, Motukarara ..	15371	12880	62	171	5	5	—
Ngatimoti Pig Club, c/o J. A. Brereton, Ngatimoti R.M.D., Motueka	14779	15278	83	221	9	7	5
Ohau Pig Club, c/o W. R. B. Evans, Buller Rd., Levin	13481	13207	84	288	11	8	4
Parkvale Pig Club, c/o E. T. Bliss, Parkvale, Carterton	16449	14880	90	331	8	7	3
Patetonga Pig Club, c/o Roy McCullough, Patetonga R.D.	15548	14851	77	228	7	5	5
Pohangina Pig Club, c/o T. J. Spelman, Raumai ..	14740	14589	95	274	11	8	3
Rockville Pig Club, c/o W. D. Lash, Rockville, via Nelson	15100	12805	90	299	9	7	3
Rushton, P., Tatuanui R.D., Morrinsville	12528	15729	91	229	8	7	5
Rushton, P., Tatuanui R.D., Morrinsville	12528	14539	103	357	11	10	2
Swann, D., Tikitiki	15468	16870	87	239	9	9	5
Swann, D., Tikitiki	15468	14794	98	275	11	9	3
Tikapu Pig Club, c/o D. Swann, Tikitiki	15036	16099	81	265	6	6	4
Waihi Pig Club, c/o A. C. Davidson, Tauranga Rd., Waihi	16044	14234	88	313	11	10	4
Watt, Geo., Patetonga R.D., Morrinsville	15432	15543	87	349	11	10	4

Large Blacks.

Horsham Downs Pig Club, c/o C. G. Haultain, Horsham Downs, Hamilton	2110	2068	81	242	8	6	4
Paengaroa Pig Club, c/o H. Jones, R.M.D. Te Puke ..	1836	2376	76	187	8	6	—
Pio Pio Pig Club, Pio Pio	2971	1738	74	264	8	6	5
Rangiriri Pig Club, c/o C. R. McCutchan, Rangiriri ..	2447	1739	125	431	11	11	1
Rotorua Pig Club, c/o B. Bray, Box 161, Rotorua ..	2271	2108	76	250	11	10	5
Silverdale Dairy Flat Pig Club, c/o C. C. Grut, Silverdale	2528	2277	79	289	13	7	5
Te Poi Pig Club, c/o G. L. Bellamy, Te Poi R.D. ..	2946	2691	60	172	9	8	—
Tokomaru Pig Club, c/o N. J. Whyte, Tokomaru ..	2872	2805	89	192	11	7	—
Turner, C. F., P.O. Box 161, Rotorua	2271	2405	100	305	10	8	2

READERS . . .

Use Our Free Postal Service
On Page 164

Large Whites.

Owner's Name and Address.	Herd Book No. of—		Litter Weight (lb.)		No. of Pigs.		
	Sire.	Dam.	3 weeks.	8 weeks.	Born	Weaned	Grade of Litter
Barrytown-Punakaiki Pig Club, c/o A. T. Richards, Barrytown	4558	4874	102	362	11	8	2
Barrytown-Punakaiki Pig Club, c/o A. T. Richards, Barrytown	5155	5141	138	371	11	8	1
Kumeu Pig Club, c/o A. R. Stewart, Kumeu	5389	5555	40	140	6	4	—
Linton Pig Club, c/o E. H. Bowler, Fitzherbert West, Palmerston North	5108	4860	54	160	12	6	—
Te Poi Pig Club, c/o G. L. Bellamy, Te Poi R.D., Matamata	5196	5246	73	178	12	6	—
Wafer, P., Barrytown, Greymouth	4558	5410	129	436	12	10	1

Tamworths.

Coldstream Pig Club, c/o D. E. Smith, Waikuku R.D., Rangiora	10565	11877	136	468	10	10	1
Dovedale Pig Club, c/o W. G. Kenyon, Thorpe, Nelson	11969	11531	126	420	11	11	1
Featherston Pig Club, c/o B. B. Donald, Fitzherbert St., Featherston	11710	12147	73	313	8	7	5
Guinness, J. C., Farmleigh, Ealing	11182	12416	111	347	9	7	2
Kaikoura Pig Club, c/o S. Sharpe, Kaikoura	10502	11075	80	268	7	6	4
Karamea Pig Club, c/o T. H. Jennings, R.M.D., Karamea	10338	10122	78	207	6	5	—
Kaukapakapa Pig Club, c/o T. Taylor, Kaukapakapa	11386	12604	63	253	8	8	—
Kumeu Pig Club, c/o R. J. Stewart, Kumeu	11910	12303	50	168	6	5	—
Methven Pig Club, c/o A. G. Rawlinson, Methven	11655	10816	138	375	10	10	1
Methven Pig Club, c/o A. G. Rawlinson, Methven	11655	11987	87	301	10	9	4
Munro, K. R., P.O. Box 3, Pokeno	11202	11292	99	330	7	6	3
Pokeno Pig Club, c/o R. R. Munro, Pokeno	11202	10425	58	252	10	6	—
Suter, E. A., Waiau Pa	9430	9798	93	359	10	9	3
Suter, E. A., Waiau Pa	11878	11959	117	408	10	10	2
Suter, E. A., Waiau Pa	9430	11960	44	135	10	5	—
Suter, E. A., Waiau Pa	9430	8389	82	253	7	7	4
Waimate Pig Club, c/o J. C. Studholme, Te Waimate, Waimate	7643	11517	110	301	12	7	2
Wairau Pig Club, c/o F. A. Parker, Spring Creek, Marlborough	11652	10296	94	280	14	7	3
Wakefield Pig Club, c/o S. R. Wells, R.M.D. Wakefield	8788	12280	95	346	9	8	3
Win, I. S., R.M.D. Wakefield	11969	12584	52	187	5	5	—

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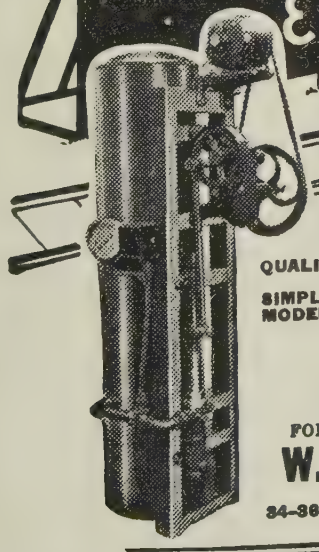

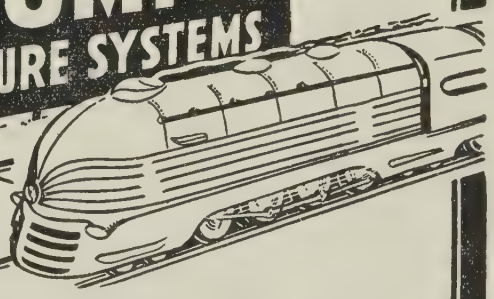

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..... J.A.

Sewage As A Fertiliser

Practical and Economic Method Yet To Be Found

— By —

W. DONOVAN, late Director of the Dominion Laboratory.

SUGGESTIONS have been made that sewage should be utilised as a fertiliser, but there are difficulties because of its dilution. Where suitable areas exist near a centre of population sewage can be applied directly to the land, as is the case in Christchurch, but, as far as can be seen, this method would not be practicable in any other large centre of population in New Zealand.

It has also to be taken into account that there is a prejudice against vegetables grown on a sewage farm, and probably this alone would make the development of this method of sewage disposal inadvisable in this country. It must be appreciated that this method is used primarily for disposing of sewage and not for fertilising the land. For the latter purpose it is probably not economic.

The alternative would be treatment to recover manurial constituents, but this would utilise at the most only part of the material in the solution.

In the activated sludge process, which is being increasingly adopted, a considerable amount of sludge is produced which gives great difficulties in its disposal. Activated sludge contains 90 and up to 99 per cent. of water, and it is mainly for this reason that its disposal is so very difficult.

In a report of a conference on "Treatment and Disposal of Sewage" by A. Parker, D.Sc., held at Glasgow in 1938 by the International Union of Local Authorities it is stated in regard to activated sludge:—

"What is required is a cheap method of drying sludge to reduce the moisture to less than 10 per cent. which could be adopted at most sewage disposal works. The dried sludge could then be converted into a powder which could be transported to farms and used as a fertiliser at a reasonable cost. During recent years various methods of producing dry sludge have been proposed and tried. These include centrifuging, treatment in various types of mechanical filters, including vacuum filters, sometimes after heating the sludge and final treatment in heated driers. Some of these methods are in operation on a large scale. For example, at Milwaukee the sludge is filtered in rotary filters and dried in rotary driers. It is then pulverised and sold as a fertiliser. None of the methods so far tried, however, have reached the stage of a proved economic proposition suitable for adoption at a large number of places."

It has to be taken into account that the adoption in New Zealand of any method for utilising sewage as a source of fertiliser would involve very heavy capital expenditure and the solution of difficult engineering problems, and in view of the experience of other countries would not be economic.

It would appear that if the application of human excreta to the land becomes essential the most practicable method would be to abandon our present water-borne sewage systems and return to the old system of privy and then disposal of the nightsoil by what is known as the Indore process, which has been successfully adopted in parts of India. This proposal is so revolutionary, however, that it is highly improbable that it would be

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adopted. Finally, it is possible that the total amount of fertilising material in sewage is perhaps over-rated by many people.

In "Sewage and Sewage Treatment," by Babbitt (an American authority) is the following comment:—

"The popular idea, possibly started by Victor Hugo in 'Les Miserables,' that there is value in sewage is not well founded. The extraction of values from sewage sludge is discouraging as much from an economical as from a scientific viewpoint."

It is very significant that, as far as can be seen, in no country have practical economic methods been adopted for recovering fertiliser from sewage.

Answer to Correspondent

Sweet Clover As Green Manure

R.C. (MATAURA):—

Would you please advise me through the columns of the "Journal of Agriculture" if sweet clover is grown or has been tried in New Zealand, as the writer notes that in the 1935 edition of Root's "A B C and X Y Z of Bee Culture" it has the following to say on page 709:—

"Sweet clover sown in wheat or oats in the spring and ploughed in for corn in late April or early in May a year later will turn to the soil anywhere from 75 to as much as 250 lb. of nitrogen per acre. It will require 20 tons of ordinary farm manure to add 200 lb. of nitrogen to the soil."

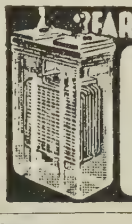
On page 707 it gives the acreage in sweet clover in the U.S.A. in 1930. South Dakota alone had 133,384 acres.

FIELDS DIVISION:—

There are two main species to which the name "Sweet Clover" are given, namely, the white flowered *melilotus alba* and the yellow flowered *melilotus officinalis*. Both of these are to be found sparingly on roadsides and on sandhills throughout the Dominion. Seed of both species can be obtained from certain of the larger seed merchants.

Sweet clover has been tried many years ago in New Zealand but as it is eaten only sparingly by stock, and hence is chiefly of value as a green manure its use has not become general. It is sometimes grown as a source of nectar for bees.

Sweet clover is of distinct value as a green crop for ploughing in, and has been given a good deal of attention in other countries, particularly North America. On farms in New Zealand, however, where red clover, white clover, and lucerne thrive, there is not the same incentive to grow special leguminous crops for green manuring. Each of the above crops is far more valuable than sweet clover for fodder, and each also returns a considerable amount of nitrogen to the soil when ploughed under. Sweet clover may be worthy of a trial for green manuring in the orchard or garden, but for this purpose lupins appear to be generally satisfactory.



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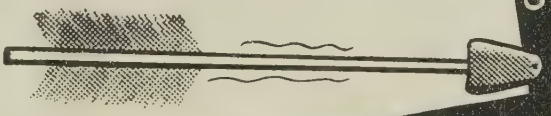

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Veterinary Notes for the Farmer

Coughing in Animals (Pigs)

Contributed by the
LIVESTOCK DIVISION

COUGHING in pigs is likely to be due to one of the following three causes—

(1) Irritation of nostrils and throat by inhaled dust.

(2) Bacterial infection by one or other of the different groups of organisms causing pneumonia or bronchopneumonia.

(3) Parasitic infestation,

all of which may occur in one outbreak:—

(a) Highly acute type, with deaths occurring within one or two days.

(b) An intestinal type, in which there is rapid loss of condition, diarrhoea, and pigs become gaunt and skinny.

(c) A pulmonary type, with disturbance of breathing, which becomes hurried and jerky, some nasal discharge, and a certain amount of coughing.

In the pulmonary form, which gives rise to the coughing, there is present a varying degree of pneumonia, with much or little of the lung tissue having become solid, and temporarily out of use. There is no specific treatment, although good results are claimed for Dagenan, a drug which, because of war conditions, is unfortunately not available for stock at present. Affected pigs should be isolated, kept in warm and well-bedded but sufficiently ventilated houses, not disturbed unnecessarily, and allowed milk with a little cod-liver oil. To control the outbreak, keep pigs in small lots of six to eight, and not in large herds, and correct any obvious faults of housing, feeding, or sanitation. Do not introduce bought pigs directly into the herd, but keep them in isolation for a fortnight.

Pasteurella infection, so-called "swine plague," is another cause of pneumonia in pigs, causing similar symptoms, and is controlled in the same way.

Effects of Dust

The effects of dust may be seen during dry weather, especially where pigs are in bare runs or in houses with earth floors. The coughing is probably due to the irritation of the nostrils and throat. While some discomfort is caused to the animal, there is no evidence that dust of this type in itself can produce any serious effect on the lungs. It may, however, be a vehicle to convey bacteria and so set up the second type of coughing.

Bacterial Infections

One type of bacterial infection is that due to *salmonella suipestifer* organisms. This infection is one of the commonest diseases among young pigs from eight to 16 weeks old. While usually associated with insanitary conditions, it is liable to occur where any factor such as poor feeding, cold weather, poor housing, or changes in feeding operates to lower the vitality of the pigs. It is seen in three forms,

Parasitic Infections

There are two principal types of parasitic infection due to the common large white worm or to lungworms. The large worm, *Ascaris suis*, is in the adult stage about 8 to 10 inches long, and is found in the small intestine. The eggs pass to the outside, and after development are again swallowed by other pigs. The young larvae wander through the liver and the lungs, and in the latter situation they may set up a certain amount of irritation and coughing.

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The greatest amount of lung damage is done in the young pigs before and after weaning. Older pigs do not suffer in this way, but heavy infestations of the adult worm in the intestine cause stunting and unthriftiness. It is fairly common to find the adult worms in the intestines of pigs at killing establishments. The number of piggeries where loss has been known to occur from this cause is not large, but it will increase as the industry becomes older. In some of the older countries this parasite becomes a serious menace.

Control of the parasite must include:—

(a) A proper worm treatment for sows and older pigs to get rid of egg-laying worms from the intestines.

(b) Strict cleanliness of farrowing pens (including washing of sows before farrowing).

(c) Protection of little pigs during first few months by using fresh, clean runs.

Lungworms

Lungworms are probably more important as a cause of coughing in pigs than any of the factors previously mentioned. There are two or three species, but all are fine, thread-like worms, 1 inch to 2 inches long, found in the bronchi and smaller air tubes of the lungs. They irritate the lining, causing coughing, and there is exudation of mucus, which may lead to complete blocking up of certain tubes and cause what amounts to suffocation. Pneumonia may be present.

The life history of all species is similar in that eggs or young larvae reaching the outside eventually enter the bodies of earthworms, in which they reach a further stage of development. Pigs, in turn, eat the earthworms, and the larval parasites are liberated and reach the air passages of the new pig host, to complete the cycle. While many pigs harbour small numbers of lungworm without harm, beyond slight bronchial irritation, greater numbers interfere with health, and considerable mortality has occasionally been seen where the infestation was severe.

No direct medicinal treatment is of value. Good feeding of a balanced type, including meat-meal or other suitable protein feed, will not only increase resistance, but will lessen the desire by the pig to root and thus eat worms. Regular changes of run will assist in keeping down the degree of contamination. It should be remembered that larval worms, either free or in the earthworm, remain alive and capable of continuing the cycle for a period of at least some months.

Treatment for worms of the *ascaris* species should not be undertaken until it is certain that worms are present, and are the cause of trouble.

Advisory Service on Veterinary Matters.

Farmers are invited to submit inquiries connected with the health of their stock, and the replies will be published under this heading.

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Answers to Correspondents

Worm Parasites in Calves

H.B. (WAIHI):—

Some time ago I asked you for a remedy for a disease you diagnosed as "black pock." You recommended a 3 per cent. solution of salicylic acid in glycerine. I am pleased to say it was 100 per cent. efficient. After a cow had had it for five months it was cured in about five weeks.

Now I would like your opinion on my calves. They were all turned out in good condition, but one was slightly dirty round the tail as if it suffered from indigestion, yet not one of my calves had what we call scours from milk. It was a bit thin, but not really poor. It is still a bit that way, but now a couple more have got bad. One will almost certainly die. It is dirty round the tail and does not walk very straight, but is not staggering. It is just weak.

In our district some farms are—supposedly—infested with "lung worms." I don't know anything about them, but calves are liable to die up to, say, 18 months old. During the latter stages they seem to suffer from maggot getting inside them from behind. I lost one last year, and have seen one or two more die like that. I have 12 calves, and it seems about four are not too healthy. The worst I have was apparently healthy three weeks ago. They are now in hilly country, but have access to swamps in gullies. They were reared in a flat between ridges and hills, but have been on fairly low land. If you advise from above I will be very pleased.

LIVESTOCK DIVISION:—

The trouble described affecting your calves is known as parasitic gastro enteritis, a condition caused by worm parasites in the stomach and bowel. These parasites, in addition to their injurious effects on the calves, produce an enormous quantity of eggs which, passing out with the bowel contents, infect the paddocks and the animals feeding on them. Where the animals are heavily infected and their health severely undermined another class of worm, the lung worm, is frequently found in the wind pipe and smaller air tubes of the lung, producing a condition known as "hoose" or "husk."

Where a likelihood of infection exists, preventive treatment by drenching the calves monthly before any symptoms develop is much more effective than later, when the animal's system has received a check which is difficult to overcome.

The bluestone drench is the one most commonly used. Starving is not necessary before drenching, although yarding for a couple of hours after is advised. Unless medicinal treatment is used in conjunction with the feeding of concentrates, such as 1 to 2 lb. daily of a mixture of crushed oats and linseed nuts, beneficial results will not be obtained.

In addition to drenching and feeding, the calves should be moved to fresh, clean, hill pasture, and drinking water should be from troughs only. The calves should not have access to any swamp areas.

When the foregoing treatment is carried out, the general improvement in the health of the calves will enable them to overcome the lung worms. Because of the location of these worms no simple method of treatment is available. Sometimes a volatile agent, such as ether or chloroform, is used by pouring half a teaspoonful into each nostril and holding the calf so that the preparation is inhaled. An alternative method is the injection into the wind-pipe itself of various mixtures; this is not easily carried out by the average farmer, as a special syringe, medicinal agents, and experience are necessary.

Feeding Value of Swedes And Turnips

SUBSCRIBER (MATAMATA):—

Will you kindly inform me through the "Journal" the relative feeding value between swede and soft turnip varieties, say, green and purple top, also Vilmorrin? Also, is there any risk in running in-lamb ewes on swedes? I have been putting them on in the morning and turning them off in the evening.

ANIMAL RESEARCH DIVISION:—

Swede turnips have a somewhat higher feeding value than soft turnip varieties, the difference, according to most authorities, being of the order of 10 to 20 per cent. in favour of the swedes. Vilmorrin is a variety of swede which possesses essentially the same feeding value as other varieties. In

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general, swedes keep better and are, therefore, available for use when the soft varieties have been finished.

Turnips have the advantage of their softness, which enables animals to bite into them more readily, so that they can be used with older animals which may have failing mouths.

In areas where both turnips and swedes can be grown a judicious selection of areas devoted to each variety enables use to be made of the softness of the turnips and the keeping qualities of the swedes, and thus permits turnips to be made available over a longer period.

As a feed for sheep, all varieties of turnip are chiefly a source of succulence and do not possess sufficient feeding value for use as the sole ration. In-lamb ewes do well on swedes as part of their ration, but success in the use of this fodder depends on proper management of their feeding. Thus, the ewes must be allowed a run-off on a good paddock or, if this is not available, hay or chaff should be fed along with the swedes.

Feeding off swedes in breaks also helps, as the sheep then come on to fresh areas and obtain a mixture of tops and roots which is more nutritious than roots alone. When no run-off or supplementary feeding is provided the ewes will suffer from under-feeding and will lose condition. Weak lambs might be the result, and there are even reports which indicate that antepartum paralysis might develop.

Feeding Pet Lambs

"BENNIE" (MAHENO):—

Would you please tell me the correct feeding for pet lambs from birth?

LIVESTOCK DIVISION:—

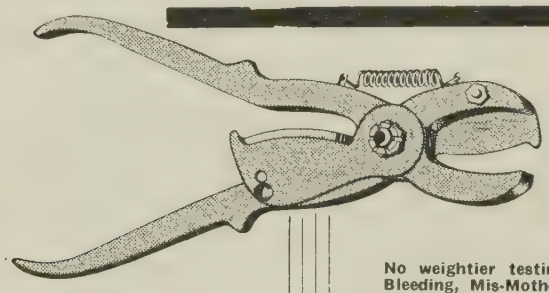
There are two methods of dealing with an orphan lamb:—

(1) If possible, provide a foster mother. If a ewe has lost her lamb, the latter should be skinned and the pelt placed as a jacket over the orphan lamb for a few days. This is usually sufficient to cause the ewe to adopt the lamb. Another way is to tie the ewe up in a pen with the lamb and suckle the lamb on the ewe until she takes to it.

(2) If a foster mother is not available, the lamb can be raised on cow's milk. Remembering that a ewe's milk is high in fat, use the milk from a cow giving milk rich in fat. It need not be diluted with water. For the first few days the lamb must be given only small amounts of milk, two to three tablespoonfuls at a time, but fed often—every two hours for first day; afterwards, four to five times daily for first week at intervals of three to six hours. Subsequently, the time between feeds is increased, and one less per day is given. After the lamb is three weeks old feed three times per day.

Lambs will make good growth if they are fed regularly and frequently and only small quantities given. The best way to feed is with a bottle and nipple, the bottle being warmed by immersing in water at about 120 deg. F. The bottles and nipples must be kept clean by washing and scalding.

The most frequent cause of trouble is over-feeding. If the lamb is troubled with scours, reduce the quantity of milk and add a teaspoonful or more of lime water. If this should fail, add a teaspoonful of castor oil to the milk as often as may be deemed necessary.



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Lower Kokatahi, 25th April, 1939.

Dear Sirs,—"I used the 'MOWAT' Tailer last year on all my lambs, and was very pleased with it in every way. As far as I am concerned, I shall never go back to the knife. I think, although it was a bad season, my fat lambs are better than ever before." (Signed) J. W. KELLY,

Cheviot R.M.D., 10th October, 1938.

Dear Sirs,—"I have used the 'MOWAT' Instrument on my lambs for the past two seasons, with very satisfactory results. I have tailed lambs of all ages, big and small, without any bleeding, and I can safely say it is outstanding. The lambs mother up as soon as let go, and continue to thrive just as if they had never been operated on at all." (Signed) J. BECKETT.

Ngatimoto R.M.D., Motueka, 10th May, 1939.

Dear Sirs,—"I have had absolute success in the use of the Tailer, and no trouble with Arthritis at all, and lambs have gone away fat earlier than before we used the Tailer." (Signed) C. P. STRACHAN.

Wai Toi Toi, Taranaki, December 11th, 1938.

Dear Sirs,—"I should like to say we used your Instrument in docking our 350 lambs without a single casualty. It is really effective in stopping the bleeding." (Signed) ALFRED SMITH.

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Farm Practice and Management

Transport of Milk from Shed to Roadside

WITH the change-over on many farms from the supply to butter factories to cheese factories, quite a few problems have confronted many dairy farmers. By no means the least of these is the conveyance of the much bulkier milk from the shed to the roadside.

Cartage by lorry or horse and cart is quite a major undertaking, even where a good track is provided, but this means of transport becomes quite impossible on heavy, wet land unless heavy expense is entailed in laying down a permanent, metalled road.

Bearing in mind that such a road may become a hindrance instead of an asset when normal butter production is resumed, alternatives to such a course should be sought before one is committed to an outlay of this kind.

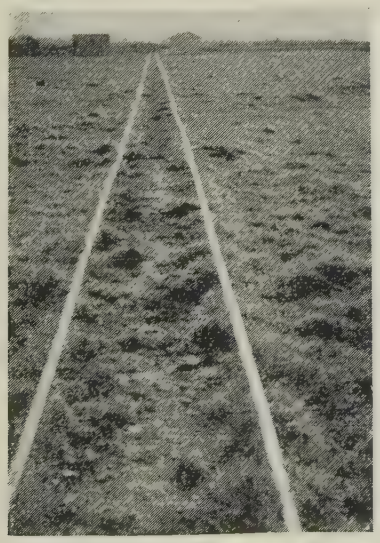
A transport system which is widely used on the Hauraki Plains because of the very wet winter and spring conditions could well be applied to the solution of this problem in other districts.

This consists of building a trolley to run on lines between the shed and the roadside. Apart from the wheels and axles, the only material needed in its construction is timber and a few nails.

A side view of the trolley laden with milk cans.

The line itself may consist of 3in. x 2in. hardwood rails laid on 4in. x 3in. rough-heart rimu sleepers spaced at 4ft. intervals. The rails, which should be placed on edge to give a 3-inch depth, can be held in position with 6in. nails driven right through into the sleepers. The track for such a system must be rough levelled, and trolley stability will be assured if the rails are spaced 3ft. 3in. apart. To ensure long life in the track timbers, it is desirable, but not essential, to treat all lengths with creosote.

Trolleys may be constructed in various sizes to meet individual requirements, but the height should be such that it will minimise the actual amount of lifting from the trolley deck



The trolley rails from the shed to the roadway.

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An end view of the trolley.

to the collecting lorry. A milk can weighing more than 200lb. when full cannot be played with lightly, and when many have to be handled the work can become very exhausting. For this reason it is important to build to a height that will as nearly as possible conform to that of the collecting lorry floor. In general, this will be in the vicinity of 3ft. 6in.

Four wheels—fitted with flanges, and of about 15 inches in diameter, and coupled by 2-inch axles—should be used as the foundation of a trolley. Length and width can be varied to suit the individual requirements, but for a load of eight 20-gallon cans a deck 7ft. long by 3ft. 6in. wide will provide ample space.

In laying the tracks some farmers have gone to the expense of using iron rails on hardwood sleepers. Such expense, even in normal times, is scarcely warranted, and most certainly cannot be justified at present, even if the material were procurable.

Others, aiming at reducing costs, employ soft timbers in the track construction. These do not stand up to constant hard usage, however, and require early replacement. Hardwood runners are certainly the most economical over a period, even if the initial outlay is higher, and the employment of this timber is recommended.

Where a trolley line has to be taken across wide, open drains, heavy stringers are needed for support, and in such a position iron rails may be employed advantageously.

In conclusion, I would like to acknowledge my indebtedness to Mr. E. Challis, Kerepeehi, for supplying much of the information embodied in this article, and also for providing facilities to obtain the accompanying photographs.

—*C. WALKER, Instructor in Agriculture, Thames.*

Methods of Combatting Grass Grub

NEARLY every autumn a certain amount of grass grub damage is done to pastures in the Western Bay of Plenty. The severity of the attack varies from year to year, but every season at least some pastures are more or less badly affected. Damage seems to be more severe on hill country than on coastal points, and pastures dominantly paspalum are less severely affected than pastures containing a large proportion of the finer grasses. Sometimes, pastures on a farm may be so severely damaged that there is serious loss to the farmer, and in all cases production is affected to some extent.

It is very easy to identify affected areas. The grass has a yellowish, dead appearance, and, if pulled, will come up in sheets. In the soil underneath will be seen the greyish grubs that are responsible for the damage. The attack leaves the soil in a characteristic unconsolidated spongy state.

Where only a small part of a farm has been affected, the damage can be repaired fairly simply by feeding out good quality hay and heavily stocking the damaged areas. The seed shed from the hay, together with the consolidation obtained from the trampling of the stock, will help to improve the paddock considerably, and in many cases paddocks treated in this way show little effect of the attack by the following season.

In cases of heavy attack, treatment will vary according to circumstances. When a farmer can afford it, it may be advisable to plough in the autumn and sow down a temporary greenfeed crop of, say, oats and Italian ryegrass. This can be grazed off in the spring and shut up for a crop of hay or silage.

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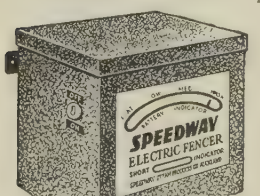

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After the crop is harvested the paddock can be resown in permanent pasture. This method has given excellent results on several farms in the Bay of Plenty, and is of particular value on farms where the hay available is of doubtful quality or where there is likely to be a shortage of green feed in the spring.

On the other hand, on a well-developed farm where ample high quality hay is available, heavy stocking and feeding out will give good results even if a paddock is heavily attacked.

In all cases of attack, a good topdressing of superphosphate is necessary to help the new grass along.

Oversowing a mixture of perennial ryegrass, crested dogstail, and white clover will help, particularly in cases where the hay available has been harvested from poor pastures.

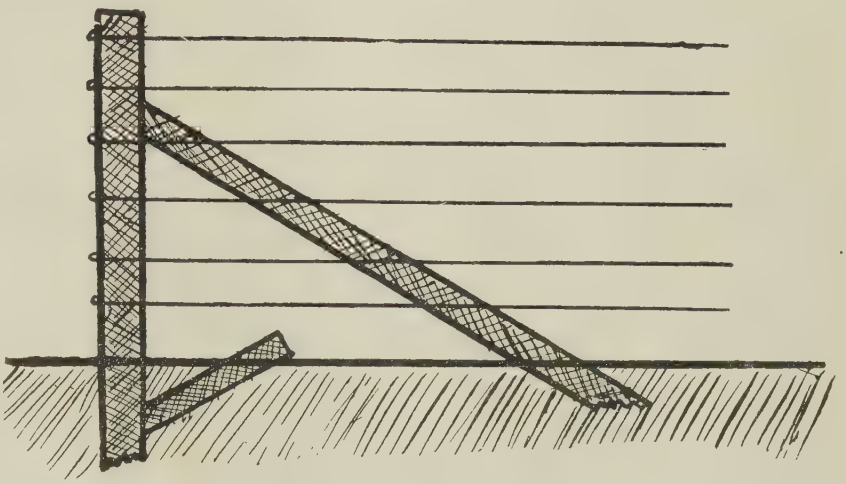
It will be seen that treatment will vary according to severity of attack and the facilities available on the individual farm. The main point is that if a farmer will tackle the problem, realising that any treatment must be based on the principle of reconsolidation and re-seeding, coupled with adequate topdressing, grub-infested pastures can be improved quite successfully and rapidly.

—A. V. ALLO, Instructor in Agriculture, Tauranga.

How To Prevent Strainer Posts From Rising

THE pull of the wires on a strainer stayed in the usual way will tend to raise the post in the ground, because the stay will prevent it from moving forward save by rising, writes a correspondent. The part of the post against which the stay rests will, if it moves at all, move forward in a segment of a circle, having for its radius the length of the stay.

This upward thrust of the stay as ordinarily used can be effectually neutralised by use of a second stay, held against the post at the ground level, and sloping downward toward the post in place of upward. The length of the second stay is of no importance, but it is essential to have it securely "footed," and it must be so secured against the post, either by shallow mortising or by driving a few staples into the post immediately below the stay, as to prevent the post from rising without lifting the end of the stay with it.



As will be seen from the accompanying diagram, just as the one stay makes it impossible for the post to move forward without rising, so does the other make it impossible for it to move forward without falling or going further into the ground. The action of each stay neutralises that of the other, and the post will not move.

Stayed in this way, an ordinary post will serve as a strainer, and, no matter how slushy the ground may be beneath the surface, so long as the surface is sufficiently solid to hold the stay foot-pieces, the post will stand. It will, in fact, stand even if the hole is not filled with earth.

—J. JOHNSTONE, Manurewa, Auckland.

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Treating Old Bones for Manure

INFORMATION on how to utilise old bones for manurial purposes is sought by a correspondent, G.B. (Opotiki), who writes:—

I have a quantity of old bones lying around. and wish to do something with them, and have been told that if put in a large container, layer for layer, bones and woodash, I will be able to use the bones, for they will break down to a mealy substance under the influence of the wood ash in about six months' time. Has this matter ever come to the notice of officers of the Department of Agriculture in that form, and will that happen, and what value would such manure be? I know how good wood ash is. Would the bone contain the same or nearly the same value for manurial purposes as the steamed bone obtained from the works.

If the above method of reducing bones for manure is not practicable, how can it be done (if possible) on any farm, as most farms have bones that could be made use of, if there was some easy method such as the above seems to be?

In reply, an Instructor in Agriculture states:—I have not heard of wood ashes being employed to reduce the hard tissue of the bones to a friable condition, but a method employing quick-lime is not an uncommon practice today, while a very old method depending upon fermentation may also be profitably used under certain conditions.

(1) Quick-lime Method.

Upon a 6 in. layer of bones place a 3 in. layer of lime and then a 4 in. layer of loamy soil. Repeat this process until a heap of practical dimensions has resulted, and then completely cover with a thick layer of good soil. Holes are then bored into the heap from the top and water poured in to slake the lime. For two or three months the mass of material will be very hot, but after this period the bones will be found to be satisfactorily reduced, and the whole heap may then be thoroughly mixed together. The "fertiliser" can then be either bagged and stored away or used immediately.

(2) Fermentation Method.

A heap of bones and soil is made as above (2/3 bones to 1/3 good soil), and the layers thoroughly moistened with urine during the process of building. If obtainable, horse urine is better than cattle urine, but the latter is quite satisfactory and more easily procured. When completed, a thin layer of soil on top will suffice, and from time to time additions of urine should be made. Normally, a few weeks should be sufficient to reduce the bones to an effective condition. Then thoroughly mix heap and use as for method No. 1.

In manurial value both of the methods described should give you the full phosphate-content of the bones used. As a relatively large quantity of more or less inert matter (soil) has been employed in reducing the bones to a usable condition, however, it will be apparent that a greater amount of the mixture will be necessary, say, per acre, than if the bones had been treated alone. By reason of the quick-lime used in method No. 1, the resultant mixture will, of course, be greatly enriched in this calcium compound very essential in certain circumstances, but not so much in others. On the other hand, the urine used to ferment the bones in method No. 2 will have added some nitrogen and quite a little potash to the final mixture.

New Animal Feed

WARTIME difficulties in the operation of the cod fishing industry have led to the introduction of two new materials for animal feeding. The first is a diluted cod liver oil—a mixture of cod liver oil of high vitamin potency with other edible oil—and the second a solution of vitamins A and D edible oil.

The British Standards Institute, with the approval of the Ministry of Food and the Ministry of Agriculture and Fisheries, has now issued standards for these substitutes; B.S. 909, vitamins A and D in oil for animal feeding purposes, and B.S. 910, controlled cod liver oil mixture for animal feeding purposes.

The British Standards require the materials to have vitamin potencies of a sufficiently high level for animal feeding purposes, and it is stipulated that the British Standard Chick Test, B.S. 911, shall be the standard for ensuring that all the vitamin D present is of the form suitable for poultry feeding.

Copies of these specifications can be obtained from the New Zealand Standards Institute, Hamilton Chambers, 201 Lambton Quay, Wellington C.1., price 2/9 each, post free.

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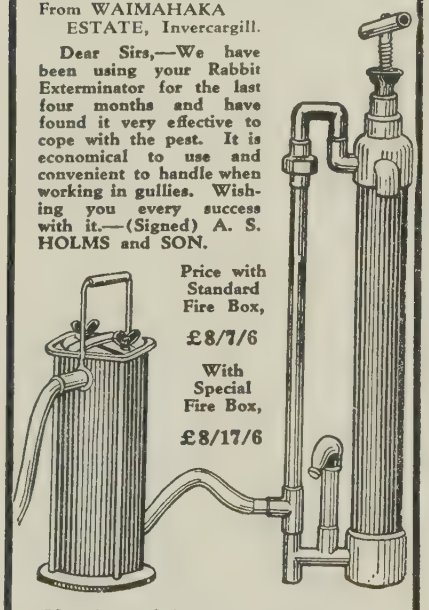

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In the Orchard and Vineyard

Orchard Notes

Spring Work in the Orchard

PRUNING operations in the orchard, if not completed, should be pushed ahead as speedily as possible in order that attention can be given to seasonal spraying operations. The gathering up and burning of all prunings not only clears the land ready for spring operations, but is a factor in the control of diseases.

Success in fruit-growing is obtainable only by strict attention to all details which will result in an increase in the production of best quality fruit on an economic basis and a reduction in production costs consistent with the production of that quality fruit. Proper pruning plays an important part, for not only will better crops of high quality fruit be produced, but the cost of maintenance of the orchard during the balance of the year will be considerably reduced.

Although the orchardist may feel that he cannot afford, in these times, to carry out all the known necessary operations, it will be found that the little extra expenditure involved is actually an asset rather than a liability. He should carefully consider such questions as the production of high quality fruit, an adequate spray schedule, proper methods of cultivation, suitable fertilisers, and adequate drainage.

Production Per Tree

Production per tree is important, and anything the orchardist can do to increase production is one step towards success, but the fruit produced must be of high quality. Generally speaking, the cost of production decreases as the production per tree increases. Therefore, any extra attention will result in added return to the producer.

Spray Schedules

The eradication of the numerous pests and diseases in the orchard demands constant attention throughout the season. Any relaxation may prove costly not only in the production of high quality fruit, but in the extra cost in the grading and packing of such fruit.

Spraying equipment should be in good order when starting operations, and attention should be paid to machinery, hose, nozzles, and all accessories. Because spraying is not the most pleasant of occupations, thoroughness is often sacrificed for speed, but it is a waste of time, material, and money to spray a tree and leave parts untouched, as they then act as breeding places for pests and diseases. Disease control depends not only on the strength of spray applied, but also on the complete coverage of all parts of the tree. Consequently, thoroughness of application cannot be stressed too strongly.

The times of application for the different sprays are obtainable from the Orchard Instructor for the district, and should be adhered to as closely as possible. One spray missed during the spring, or not applied at the proper time, cannot be remedied throughout the season.

Pests Encountered

The pests and diseases mostly concerned at this time are scale insects, principally San Jose, red mite, blackspot, and leaf-curl. For San Jose, a thorough application of red oil at the strength of 1 in 20 is recommended. Care should be taken to see that there is no movement in the buds, otherwise damage might occur. Every effort should be made to control this pest, and complete coverage is essential.

Eggs of red mite, usually found in clusters round the bases of fruit spurs and joints of branches, will be destroyed by the application of a strong solution of red oil during the dormant period, thus reducing the chances of infection during the early part of the growing season, when all the energy of the young foliage is required in the production of high quality fruit.

The question of the use of Bordeaux mixture or lime sulphur as a base or foundation spray for the control of fungus diseases exercises the mind of growers, but much depends on the particular disease they wish to control. Although lime sulphur has been claimed to be the best spray for powdery mildew, there appears to be no great evidence to support that view, for good results have been obtained by the use of Bordeaux mixture, and, as it is recognised as the better fungicide, due consideration should be given to it as a

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base or foundation spray. Slight exceptions might be made in the case of varieties known to be susceptible to spray injury, but, if applied at the correct time and possibly a little nearer the delayed dormant stage than the green tip stage, no damage should result. As Bordeaux mixture is known to cause russet if applied later than the green tip stage, subsequent applications should be of lime-sulphur.

For the control of peach leaf-curl, Bordeaux mixture at strength 5/4/50 should be applied just as the buds begin to swell and before any leaves are exposed; otherwise damage might occur. If done thoroughly at this stage, no trouble should be experienced for the balance of the season.

Cultivation and Manuring

Cultivation should begin as soon as weather conditions are favourable and the soil is reasonably dry, the object being to reduce the soil to the tilth necessary for the conservation of moisture throughout the growing season. Any attempt to cultivate when the soil is too wet will defeat this object and the trees will suffer. Green crops should be ploughed in as soon as possible so that the trees may obtain any benefits from these crops as soon as they start growth in the spring. By good cultivation the land will be thoroughly aerated, soil fertility improved, moisture conserved, and favourable conditions created which will assist the trees in the production of high quality fruit.

Quantities of plant feed are withdrawn from the soil every year by fruit trees, and unless this depletion is replaced by the application of manures and fertilisers the trees must eventually suffer in both growth and bearing capacity. No set manurial programme can be recommended for the whole of the Dominion, as much depends on the different class and nature of soils in the different districts, but generally speaking, a complete fertiliser containing the three three elements most necessary—nitrogen, phosphoric acid, and potash—will be found the most beneficial for both growth and production. The absence of any one of the essential plant foods is usually noticeable in the tree itself. As an example, fruit trees lacking in growth, with small foliage and premature dropping of foliage, points to a deficiency in nitrogen, while lack of colour, scorching of foliage, and weakened but production is usually associated with an insufficient supply of potash.

With the shortage of inorganic fertilisers, attention should be given to the organic fertilisers available. Blood and bone is a safe and reliable fertiliser, containing both nitrogen and phosphoric acid, and the addition of any potash available will provide a complete manure of much value. The addition of any green crops or decaying vegetable matter will provide humus and assist the micro-organisms in their work, as well as improving the texture of the soil and increasing its capacity for heat and the conservation of moisture.

—G. STRATFORD, District Supervisor, Dunedin.

Citrus Notes

Citrus Rootstocks in New Zealand

THE rootstocks generally used in New Zealand at present are the sweet orange, the rough lemon (citronelle), the trifoliate orange (Poncirus trifoliata), and, to a limited extent, the sour orange Until the results of definite scientifically controlled experiments on a range of soil types are available, recommendations must be based on general observations.

These indicate that the sweet orange is the safest all round rootstock. It is recommended for sweet orange varieties and New Zealand grapefruit. Its chief weakness appears to be its susceptibility to collar rot. The trifoliate orange can be recommended for mandarins and for sweet orange varieties if the soil retains moisture during the summer months. In general, trees budded on this stock should be planted closer together, 16 to 18 ft. should be adequate. The quality of fruit on this stock is outstanding.

The rough lemon (citronelle) can still be recommended as the standard stock for lemons, including the hybrid "Meyer" lemon.

The sour orange must at present be classified with "Cleopatra" mandarin and double-worked stocks as worthy of trial, but it is not yet proved commercially.

Throughout the citrus belt in New Zealand there are citrus trees of good quality, but it is essential that occupiers of properties should be conversant with such particulars in regard to the trees as root stock upon which worked, name of variety, age, soil, and annual crop over a period of at least three or more years.

In order that persons interested may learn to recognise rootstock and variety, the following hints are given. If the tree, especially orange, is very vigorous and upright in its growth, with little or no fruit for its age, and no union is visible, it is probably a seedling. Poncirus trifoliata (trifoliate orange) rootstock is characterised by mottled bark and flanging. Rough lemon (citronelle) stock also exhibits flanging but no mottling, and sweet orange as a rootstock is generally round and even. If a root is cut and the cut end exposed to the air, it will generally break into foliage, and the characteristic orange, lemon, or trifoliate appearance will be recognised.

The recognition of varieties presents a greater problem, and will be dealt with in greater detail.

Reminders for the Month

Complete the planting of citrus and shelter trees.

Turn under leguminous or other cover crops.

Apply the spring dressing of manure.

Overhaul the spray equipment.

Harvest sweet orange varieties when mature.

Harvest N.Z. grapefruit for dessert purposes if sufficiently tree-ripened.

Lemons

Lemons, in order of their preference, under New Zealand conditions, are:—

(1) **Genoa.**—A thornless semi-dwarf tree well furnished with laterals. It is a good cropper all the year round. The fruit is exceptionally uniform in shape, being oblong and pointed at both ends, with very small pith and 7 to 10 regular sections.

(2) **Villa Franca.**—This variety has the advantage of being an early bearer and also of bearing its main crop in summer. Its branches are shorter jointed and less drooping than those of Eureka, and the tree is thus better suited to exposed conditions. The fruit has a pointed apex and rounded base. There are 11 well-defined and regular sections, and there are generally more seeds present.

(3) **Lisbon.**—A thorny tree of the short-thorned strain, vigorous grower, well furnished with fruiting laterals

and foliage. It tends to ripen its heaviest crop in September-October, and this, combined with its thorny character, is a distinct disadvantage. The fruit is oblong, with a very sharp pointed nipple. The rind is fairly smooth and sweet to taste. The pith is small, and there are 10 to 11 small regular sections. Another strain of poorer quality is known as the long-thorned type.

(4) Meyer.—This is really a sweet orange lemon hybrid, but is becoming increasingly popular in domestic gardens. It is recommended to be planted at a distance of 15 ft. apart in commercial orchards. It is of a deep, golden yellow colour and beautiful texture, but shape is more broadly oval than the usual lemon. One main crop ripening about May-June is borne.

(5) Eureka.—This lemon, although thornless, is characterised by willowy growth and the bearing of fruit at the ends of the branches. There are two local strains, of which the "sweet rind" is the better. The other type sports freely, and often gives thick-skinned and irregular fruit of low commercial value. It is generally a shorter fruit, with a small nipple. The pith is small, and there are 10 well-defined and regular sections.

Rough Lemon.—This is quite different from the varieties previously mentioned. It is often found at the old Mission stations, and is often miscalled the "Maori" lemon. It is extremely rough, the skin being wrinkled and in many cases loose. The fruit has an open centre, and the juice is low in acid. The rind is of varying shades from yellow to orange when the fruit is mature. For culinary purposes it is inferior. Its greatest value is as a source of seed for rootstocks.

Ponderosa.—The fruit is large and pear-shaped, and it is possible that it contains pomelo strain. The rind is rough, and there are 12 distinct sections and coarse grained greyish flesh. It is generally considered by commercial citrus growers to be a valueless novelty fruit.

Sicily.—This variety is seldom seen, but is oblong in form with short abrupt nipple. There are 12 regular sections, fine grained, greyish yellow flesh, small pith, and generally 12 seeds.

Limes

A fruit that is sometimes confused with the lemon is the lime. The lime is not at present grown commercially in New Zealand, but occasional trees are found. Externally, the fruit resembles a fine-textured, small lemon, but the flavour of the fruit is distinct. The leaf is smaller than that of the lemon, and has a small winged petiole. The commonest varieties are the Mexican and Tahiti lime.

The Mexican lime grows as a shrubby bush 10 to 15 ft. high, and has many small sharp spines. The fruit rind is smooth and very thin, with short pointed nipple, 10 sections, light greyish green flesh, open pith, and lime flavour.

The Tahiti lime is a round-topped tree with drooping branches. In shape the fruit is larger than the Mexican, with a broad-based nipple, 10 sections, greenish flesh, open pith, and lime flavour. The Persian lime is probably identical with Tahiti.

Another citrus tree often called a lime is the Rangpur. It is sometimes used as a rootstock. The tree has the habit of the lime, but the fruit is roundish and the nipple, if present, is short. The fruit is orange red in colour, and the rind is inclined to be rough and separates from the pulp. It has seven sections, which readily separate. The flesh is slightly orange coloured, and the flavour of the juice is unlike the lime.

(To be continued.)

—A. W. M. GREIG, Citriculturist, Auckland.

Viticulture

Points in Making Cider

Determination of Soil Acidity

A SAMPLE of 25 c.c. of the cider is heated to the start of ebullition to expel any carbon dioxide gas, and titrated while hot with decinormal (N/10) sodium hydroxide, using 5 per cent. phenolphthalein as indicator. The results are expressed in terms of malic acid—1 c.c. of N/10 alkali = 0.0067 grams of malic. If the cider has definitely no gas in it, it is not necessary to heat the sample.

Equipment Required

(1) 1 x 50 c.c. burette, graduated in tenths of a cubic centimetre. The burette is fitted either with a glass top or a rubber jet and clip. (2) 1 burette stand, either of wood or iron. (3) 1 x 25 c.c. pipette. (4) 1 x 200 c.c. glass beaker. (5) 1 x 4 ozs. of 5 per cent. solution of phenolphthalein. (6) 1 glass stirring rod.

All the above equipment is obtainable from wholesale druggists and scientific instrument dealers.

Method.—By means of the pipette, place 25 c.c. of the sample to be tested in the beaker and heat to near boiling (175 deg. F.) to drive off any gas. Allow it to cool slightly, add 2 drops of the 5 per cent. phenolphthalein, and place under burette which has been filled to the zero mark with the N/10 solution. Allow the solution to drip slowly into the cider, stirring well all the time with the glass rod. As soon as a pink tinge persisting for at least 30 seconds appears, close burette tap and read off the volume of N/10 solution used. Every 1 c.c. of N/10 solution used = 0.0067 grams of malic acid.

Determination of Alcoholic Content

The alcoholic content is determined by the ebullioscope, which consists of the following parts:—

(1) The boiler into which the distilled water or the cider is introduced. (2) The condenser, which screws on to the boiler. (3) A thermometer which registers the temperature in 1/10ths of a degree Centigrade, but enables it to be estimated to within 1/100th of a degree. (4) A spirit burner. (5) A sliding scale by which the alcoholic strength of the cider is ascertained. (6) A doubly-marked test tube. The larger volume (50 c.c.) gives the quantity of cider to be used for each test, the smaller volume (15 c.c.) the quantity of distilled water in which the boiling point is determined.

Rinse the boiler with distilled water before use. Close the lower stopcock and introduce 15 c.c. of distilled water into the boiler. Screw on the top condenser and fix the thermometer in place. **Do not at this stage put any water in the condenser.** Place the lighted lamp so that the flame is **directly under the chimney.**

As soon as the temperature on the thermometer remains constant, it is noted and the sliding scale adjusted so that the temperature at which the water boils (given on the middle portion of the scale) is exactly **opposite zero** on the outer side of the scale. Turn the screw on the scale to keep it locked in position. The boiling point of the water need not be determined for every test; it is sufficient to do this once in the morning and once in the afternoon, provided, of course, that

(Continued on page 156.)

Guide for the Home Garden

The Planting Season Is Here

**"To mute and to material things,
New life revolving summer brings."**

FOR the home gardener, September is without doubt the busiest month of the year. It is the month when the foundation of most of the season's vegetable production is laid, and as soon as the soil begins to warm, seeds should be sown for the respective crops it is intended to grow, and plants ready for transplanting should be set in their permanent places.

It would be well to remember that, in order to obtain maximum results, the seed bed should be properly prepared. Time spent in this operation will be amply rewarded, and in this respect the recommendations concerning seed-sowing in the June issue of the "Journal" should be noted. For the production of plants which will ultimately be transplanted, it is better to sow the seeds in rows, or even in boxes; broadcasting is wasteful. When seeds are sown in rows better precautions can be taken to prevent damping off of young plants, and, should an outbreak occur, it can be more easily controlled. In addition, better and stronger plants will be produced.

Lettuce plants which may be available can be transplanted now, and successive sowings of seed made for future use. This extremely valuable salad vegetable should never be missing from the kitchen garden during the next seven months. For winter production, special cultural practices are necessary. Lettuce plants are easily grown in good, rich, well-drained soil, but plenty of water must always be provided, and the plants must be kept particularly free from weeds. Webbs Wonderful, Coopers Success, and No. 691 are recognised market garden varieties. The last-named is particularly a summer variety.

Celery

No vegetable seeds call for more specialised attention than celery. It is generally recognised that the production of high quality celery demands the best knowledge and experience of the would-be producer, yet the labour expended will be well worth while.

Towards the end of September the seed may be sown in a box and placed in a warm, sheltered part of the garden. Great care must be taken in sowing and covering the seed, and the soil must never be allowed to become dry. Should watering become necessary, place a piece of scrim over the soil before using the watering can to protect the seed from being washed free of the soil covering. The seed will probably take from 17 to 21 days to germinate. When the young plants are 1½ inches to 2 inches high they may be "pricked out" into the garden, spaced 2 inches apart each way, and when about 5 inches tall should be planted where it is intended to grow them to maturity. Golden Self Blanching and Golden Phenomenal are recommended for present sowing.

Peas

Early-sown peas will require attention this month, and more seed should be sown for successional cropping. Sow in a V-shaped trench made with a hoe, and press the seeds into the soil not less than one inch, covering with a mixture of soil and one-third sand. On top of this—and in the trench—throw a few handfuls of burnt or hydrated lime, which will prevent birds and slugs destroying the young plants. Subsequent dressings of lime will reduce slug damage. Do not fill in the trenches after sowing, as this will be done by subsequent cultivation. Place the seeds 3 inches apart, and thin to 6 inches apart. Varieties recommended for present sowing are W. F. Massey, Greenfeast, and Stratagem.

Carrots

For eight months of the year (according to location) seed of this highly important vegetable may be sown, and with reasonable care fair to excellent crops can be produced. In view of the prevalence in some districts of the carrot fly and the scarcity of horticultural naphthalene, two crops of carrots should not be grown in succession on the same piece of land. The importance of carrots in the daily diet may be more fully appreciated when it is realised that the British Minister of Agriculture has asked farmers to grow an additional 30,000 acres of this vegetable during the present season. This area, it is estimated, will provide more carrots for consumption in Great Britain than were formerly available from both locally-grown sources and importations.

In Britain during the Great War shops were encouraged to sell carrots to children. The outstanding dietetic value of the carrot lies in its sugar-content, which amounts to between 4 and 5 per cent. In addition, it contains a little starch, pectin, saline matter, volatile oil, malic acid, and carotene. The latter element is the source of vitaman A, which protects against infection and is essential to growth. A distinguished British authority (Sir Humphrey Davy) declares that the nutritive matter of the carrot is 98 parts in 1,000, of which 95 are sugar and three starch. A generous quantity of carrots in our diet, says another authority, will give colour to the cheeks, lustre to the eyes, and gloss to the hair.

It should, however, be noted that lengthy cooking will tend to destroy the vitamin-content, and that young carrots are richest in vitamins. Grated raw carrot on bread and butter will provide excellent sandwiches for lunch.

From the foregoing comments on carrots as a useful and almost indispensable vegetable it will be inferred that successive sowings of seed will provide the best and most valuable supplies. Any part of the garden just cleared of a crop that has been heavily manured will, as a general rule, contain sufficient plant nutrients for a bed of carrots. Dry wood ashes, if available, may be broadcast over the soil and raked in before sowing the seed. The seed should be sown in shallow drills and covered not more than half an inch with a mixture of fine soil and sharp sand. If the soil is inclined to "set," mix some radish seed with the carrot seed and sow together. The radish will germinate more quickly, and, being a more vigorous grower, will assist in breaking any crust which may form, and will also indicate the lines of sowing. If not required, the radish can be destroyed by cutting with a sharp knife. In a kitchen garden of small size where cultivation is carried out regularly by hand, the rows need not be more than nine inches apart. Sow sparingly, and thinning can be done by using the young roots for soups, etc.

Seed may be sown from now until the end of the year, with a late sowing in early and late February, according to the location of the garden. Varieties: Champion Scarlet Horn, Chantenay (specially recommended), James Intermediate, Manchester Table, and Earlycrop.

What to Do in the Garden Next Month

Summary of Operations During September

VEGETABLE SECTION.

SOWINGS UNDER GLASS.

Capsicum, cucumber, egg plant, melon, marrow.

SUCCESSIONAL SOWINGS.

Lettuce, radish, spinach (round seeded), spring onions, turnip.

OTHER SOWINGS.

Peas (if they were not sown last month see last month's notes), Brussels sprouts, beetroot (globe varieties, and at the end of the month maincrop long varieties), carrot (shorthorn varieties, and at the end of the month maincrop of intermediate and long varieties), cauliflower, leek, parsnip (it is advisable to plant a portion of the requirements this month or next and the remainder in November).

SEEDLINGS TO TRANSPLANT AND PLANTS TO SET.

Cabbage, lettuce, artichokes (set tubers), potatoes (main crop).

PERENNIAL CROPS.

Asparagus.—Sow seed and transplant seedlings.
Herbs.—Break up and replant herbs.

SPECIAL NOTES FOR WARM DISTRICTS.

Sow dwarf and runner beans and a quick-maturing pumpkin (Red Warren).

CROPS IN SEASON.

(The month in brackets represents the month of sowing the seed).

Salads.—Endive (Mar.), celery (Sept.), lettuce (May, in warm districts).

Greens.—Asparagus (from the middle of the month), broccoli, savoy cabbage and silver beet (Oct.), spring cabbage (Feb.), peas (May, at the end of the month in warm districts).

GENERAL WORK.

Cultivate ground that is soon to be planted to free it of weeds and to produce a suitable seed bed, and cultivate that which has been planted.

Earth up early potatoes.

Give July-August transplanted onions a dressing of nitrate of soda or sulphate of ammonia (½ oz. to 9 ft. of row).

Dig up roots which have been in the ground over the winter and store them in a cool place. This should be done before the crops show signs of regrowth. After digging, they should be used as soon as possible; they do not keep well when taken up.

SMALL FRUITS SECTION.

Raspberries, Loganberries, etc.—One month after the bud movement spraying for cane wilt and leaf spot; repeat with Bordeaux 3-4-50.

FLOWER SECTION.

Plant gladioli corms, but leave some for later planting to produce a succession of bloom.

Complete the planting of tender shrubs and those which are difficult to transplant this month.

Complete sowings of seeds to produce seedlings for late spring and summer bedding. Prick seedlings into seed boxes when large enough to handle, and give them plenty of light so that strong plants will be produced. Take cuttings from sprouted dahlia tubers.

GLASSHOUSE SECTION.

The planting of tomatoes in the unheated house should be completed early this month.

Keep the surface of the ground cultivated, and do not apply water except when the plants really need it, and then give a thorough drenching early in the morning of a bright day.

Fix supports for the plants. Binder twine suspended from wires and attached to the base of the plants is the most satisfactory support.

Tomatoes

It is assumed from directions given in the August issue of the "Journal" that the tomato seedlings have been "pricked out" and are growing well. Care must be taken to prevent the plants from becoming "leggy" or stunted. Long, spindly, weak plants usually result from close confinement under glass. Good ventilation and gradual exposure to outside conditions is known as "hardening off." The process is clearly shown by the stems of the plants assuming a purple colour, which starts from the soil level, fading to green as it gains height, but the foliage must always remain a vigorous, healthy green colour. To protect the plants from attacks of blight, spray with Bordeaux mixture.

The proposed site for the plants should be dug over as early as possible, and a furrow about six inches deep opened down the planting line. Into this put a fertiliser mixture made with equal quantities, by weight, of blood and bone, or bone dust, and superphosphate, and a little potash, if obtainable. This should be lightly forked into the bottom of the trench, after which the soil can be replaced. The trench can be reopened a few days before planting, so that the soil may become warm. This will assist in preventing the plants being "checked" in growth through removal from the boxes.

Parsley

"For anyone run-down and anaemic, a parsley sandwich will do the work of an iron tonic much more cheaply and agreeably" (Sir Daniel Hall). Find a place in the garden for parsley. A packet of seed will grow enough plants for half a dozen kitchen gardens. Sow in spring, autumn, or now, but, as the seeds are slow to germinate, they are best sown in a box. When transplanting, set the plants six to nine inches apart, and, during warm weather never allow the bed to become dry. Any shoots showing a tendency to flower should be cut hard back.

General Hints

Save all wood ashes possible. It is rich in potash, which is very scarce and particularly expensive.

Do not waste fowl manure; store it in a dry shed. It is estimated to contain 3.6 per cent. nitrogen, 3.4 per cent. phosphoric acid, and 1.7 per cent. potash.

All soot procurable should be carefully preserved. It is valuable for the garden.

—D. K. PRITCHARD, Instructor in Vegetable Culture, Wellington.

Seasonal Work for Beekeepers

Spring Apiary Management

SPRING apiary management should begin in New Zealand some time during August, according to weather conditions. Warm days, when the bees are flying freely, will give the opportunity to ascertain the condition and requirements of each hive. Care should be taken to avoid undue delay while each hive is open for examination; otherwise, brood may be chilled and robber bees attracted by the exposure of honey combs at this time of the year. If colonies are wintered in clean, dry hives with plenty of stores, young bees, and a good queen, few will need any further attention until August.

The main object of the first spring examination is to see that each colony has an ample supply of stores, as feeding may be necessary to prevent starvation or to stimulate brood-rearing when no honey is available from natural sources.

Artificial feeding is tricky, and should be avoided whenever possible, especially where the beekeeper is a beginner and does not thoroughly understand the habits and requirements of the bees. It is much easier and more economic in all cases to supply the bees with combs of honey kept for the purpose from the previous season.

Food Requirements

At this time of the year all normal colonies will have patches of brood on both sides of two to five combs, according to the strength of the colony and weather conditions. The number of eggs laid by the queen in each hive increases daily, with a consequent heavy consumption of stores in feeding the young larvae and hatching bees. Some 15 to 20 lb. of honey may be used in each hive in a week when brood-rearing has begun in earnest, and the rate of consumption increases as the colonies gather strength.

A hive which is well stocked with bees and has a young queen may have from 10,000 to 12,000 larvae to feed daily as well as maintaining the young bees already hatched, which are unable to gather from the fields for a week or more after hatching. Consequently, the food situation soon becomes critical when brood-rearing activities increase and there is little or no nectar being gathered from the fields.

At this time of the year, where a hive has equal to five full frames of honey, it may be considered sufficient until nectar is available. A weak or medium-strength hive would require less, as the queen would not be laying at her fullest capacity until there were sufficient nurse bees hatched to attend to the feeding of all the baby larvae and keep up the necessary warmth in the hives. The strength of each hive and the amount of brood present is the guide to food requirements.

Where spare combs of honey have been kept from the previous season, feeding will be a simple matter. Remove one or two empty side combs from each hive to be fed, taking care not to disturb pollen combs on either side of the cluster, as pollen is as essential as honey for feeding the young larvae. No matter how much honey is present, very little progress can be made by the bees if all pollen combs are removed and the bees have no opportunity to gather fresh supplies, which is very often the case at this time of the year. Place the combs of honey outside the pollen combs on each side of the brood nest, and close the hive as quickly as possible.

All feeding operations must be done late in the day or when the weather is wet enough to prevent the bees flying. The best plan is to go through the apiary and quickly remove the necessary empty combs from all hives requiring to be fed, at the same time closing each hive immediately. When the bees have settled down, fill the empty spaces with feed combs, working quickly and with as little disturbance as possible.

Flying bees should not be allowed to get at the combs while they are being distributed, otherwise robbing may develop, with consequent loss of all weak and medium-strength hives in the apiary. The combs should be carried in supers on a barrow well covered with clean corn sacks, and where conditions are favourable for robbing, sprinkle a little diluted carbolic solution on the sack covers as a repellant.

Feeding Syrup

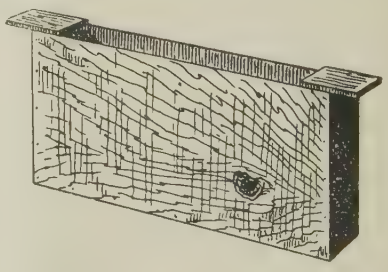
Where combs of honey are not available, the beekeeper will have to use other means to supply any food deficiency. Although honey is the natural and best food for the bees for all purposes, sugar syrup may be used with good results either to stimulate brood-rearing in the spring or to make up for any shortage of winter stores in the autumn. Conditions of feeding, however, are somewhat different. In the autumn two parts sugar to one of water is best, and should be fed warm in large quantities for quick storage in a manner that will not encourage the bees to raise more than the normal amount of brood.

A handy feeder for this purpose is a 5 or 10 lb. friction-top honey pail with small holes punched in the lid. The pail should be filled with warm syrup and inverted directly over the cluster, enabling the bees to take the syrup through the perforations in the lid. An empty super should be placed on top of the colony and sack covers placed around the pail and over the tops of frames to prevent the heat of the cluster from escaping above.

A strong colony will take the contents of a 10 lb. pail in a day. If all the syrup is not taken as rapidly as it should be, the remainder should be removed and replaced the following night by warm syrup.

Division Board Feeder

The division board feeder is perhaps the best for all spring feeding purposes, and has the same outside dimensions as an ordinary brood-frame but is two



A sketch of a division board feeder.

inches wide. It will hold about 5 lb. of syrup, and should be placed inside the hive in a space provided by the removal of two empty combs next to the hive wall. This feeder can be readily filled from a jug or watering can without disturbing the bees by quietly lifting the lid of the hive and moving it to one side, at the same time folding back the hive mat just enough to allow the feeder to be filled. It is important to place floats in these feeders, otherwise the bees have diffi-

(*Continued on page 156.*)

Chick-Sexing in New Zealand

By F. C. BOBBY,
Superintendent of Poultry Husbandry, Wellington.

CHICK-SEXING is obviously of advantage to the poultry industry, and has consequently come to stay. At first, chick-sexing was strongly criticised, as it was felt that injury could easily be done to the chicks, while inaccuracies in sexing led to dissatisfaction. Time has proved that efficient sexing does not injure the young chick, while a high degree of accuracy can be attained by the efficient chick-sexer.

At the start much of the chick-sexing in New Zealand was carried out by sexers trained in other countries, but gradually a small number of New Zealand chick-sexers have trained and established themselves in the poultry industry. With the view to encouraging New Zealand chick-sexers, the Department of Agriculture instituted chick-sexing examinations, the awards for which were first and second class Certificates of Merit. It was realised that a high standard for chick-sexing must be established to safeguard poultrymen and to prevent what is a valuable practice from falling into disrepute. A number of both first and second class Certificates have been awarded, and New Zealand chick-sexers are today carrying out much good work.

The year 1941, however, marks an important change in the position. Because of the present international situation the competition from overseas chick-sexers has gone, and those holding New Zealand certificates have an outstanding opportunity of proving that they can now carry out this work successfully. Further, the Department of Agriculture, after a full discussion with the New Zealand Poultry Board, has decided to abolish second class certificates. This has been done with a view to maintaining the standard of chick-sexing at a high level and to establish for those carrying out this work a sound reputation among poultry-keepers. There cannot be "second class" sexing if poultrymen are to be satisfied. Inaccuracy causes dissatisfaction for both the vendor and purchaser of day-old pullets.

Good sexing will encourage the purchasing of day-old pullets, and thus the elimination of many unwanted cockerels. At the present time the poultry industry cannot afford food for these cockerels, as such food is required for more productive birds. Chick-sexing must play its part in the conservation of poultry food under present-day conditions.

Chick-sexers are therefore reminded of their responsibilities this year. Success this season will establish a solid basis for building up a chick-sexing organisation for the future, and will keep this specialised work for New Zealand chick-sexers after the war. Every encouragement and help will be given by the Department of Agriculture, but only if a high standard of work is achieved and maintained.

Check Your Ideas on Incubation

By F. C. BOBBY,
Superintendent of Poultry Husbandry, Wellington.

IT is a matter of interest and vlaue to poultrymen to review from time to time present-day knowledge of the various phases of poultrykeeping, and it is proposed to discuss some of the practices and theories connected with the incubation of hen eggs. Material of this kind may be referred to on more than one occasion, and in order that any one point on incubation may be referred to quickly, this article will be divided up under a number of headings of a practical nature.

A. Hatching Eggs Before They Reach the Incubator.

To obtain successful hatching results certain precautions must be taken with eggs before they are actually placed in the incubator.

(1) How Long May Hatching Eggs Be Stored?

It is a commonly accepted axiom, supported by scientific investigation, that hatching eggs should be set as soon as possible after being laid. Investigations have indicated that there is little loss in hatchability with eggs

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stored for five to six days, but that with eggs stored for more than six days there is a steady decrease in hatchability for every extra day of storage. Accordingly, poultrymen are strongly recommended not to hold hatching eggs for longer than ten days unless exceptional circumstances force them to do so. Eggs older than ten days will hatch, but a definite loss in hatchability must be expected.

(2) Conditions Affecting Eggs When Stored.

Closely connected with the length of time that eggs may be held for incubation comes the question of the conditions under which such eggs should be stored. The chief factor affecting fertile eggs which are held for hatching is temperature. **Contrary to common opinion, low temperatures are far less harmful than high or even medium temperature.** In a fertile egg the germ may begin to develop at a temperature of 60 deg. F.—an ordinary comfortable room temperature. Thus, eggs subjected to this or higher temperatures during the day and lower temperatures at night may easily show a decrease in hatchability as against eggs maintained at a lower temperature throughout the day and night.

Unfortunately, no investigational work has been completed which fixes the danger point for low temperatures. It has been demonstrated that subjecting hatching eggs for three successive nights to a temperature just above freezing point did not reduce hatchability. If, however, eggs are allowed to freeze the result is usually a burst egg.

To sum up, poultrymen are advised to maintain a temperature of about 50 deg. to 55 deg. F. in the room used for holding hatching eggs, and to avoid allowing the temperature to rise above 60 deg. F. for any appreciable time. Such conditions appear to be the ideal. It is obvious from these suggestions that there is an advantage in collecting eggs from the laying shed as often as practicable, say, three times daily when possible.

Apart from temperature, currents of air affect hatching eggs. A heavy current of dry, warm air, or even cool air (that is, a draught) passing over hatching eggs will remove moisture, more especially from any eggs with porous shells. This must be avoided if good hatchability and the best class of chick is required.

(3) The Position of a Stored Hatching Egg.

Where eggs are stored for not more than ten days the position in which the egg is kept appears to be immaterial. If kept for longer than ten days, the practice should be to place the eggs on their side and to turn them daily. Turning hatching eggs when they are held for only ten days has not been proved to be essential, but is a safeguard against damage being done to the germ.

(4) Clean Eggs Wanted—Not Cleaned Ones.

Eggs for incubation purposes should not be washed, but any dirt on the shell should be scraped off. Washing makes a shell more porous, making the eggs liable to lose too much moisture both while being stored and during incubation in the machine. Eggs which lose too much moisture hatch out undersized chicks.

B. Eggs Which Should Not Be Placed in an Incubator.

Most poultrymen are aware that double-yolked, misshapen, ridged, and rough-shelled eggs should not be used for incubation, but there are one or two other types of eggs to which less attention is paid. The internal quality and shell texture are two characteristics which must be considered. It may be noted that the authorities responsible for laying contest regulations had this in mind when they allocated a proportion of the scoring points for the external (condition of shell) and internal qualities of the eggs produced by the birds in these contests. It will be interesting at this stage to trace what effect shell texture and internal quality have upon hatching results.

(1) Porous-shelled Eggs.

It is well known that this type of egg gives poor results. Rapid evaporaton occurs, resulting in an undersized chick or no chick at all. Shells of this type can usually be noted by their rough surface and metallc ring if tapped with a finger-nail. The soundest method of detection, when in doubt, is to place the egg in front of a candling lamp, when the mottled appearance of the shell is easy to observe.

This type of shell is also liable to what are usually termed "hair cracks." Ordinary cracks are easy to see or easily detected by gently tapping two eggs together. Hair cracks are often more difficult to detect, and here again the safe method is the use of the candling lamp. It might be thought that such small shell cracks are of small importance from a hatching point of view, but the figures quoted below and taken from experiments conducted in England reveal the true position with regard to these hair cracks.

	Normal Eggs.	Hair Cracks.
Set	25,799	289
Infertile ..	11%	21%
Dead Germs ..	6%	11%
Dead in Shell	12%	18%
Hatch of All Eggs Set ..	70%	49%

(2) Internal Quality of Hatching Eggs.

Internal quality is more difficult to observe, but with the use of a candling lamp two types of faulty eggs can be detected, namely, "watery whites" and "blood spots." Both these types of faulty eggs give poor hatching results, as can be seen by noting the figures given below. These figures were obtained in the same experiment in England quoted for "hair cracks":—

	Normal Eggs.	Blood Spots.	Watery Whites.
Set	25,799	170	63
Infertile ..	11%	22%	44%
Dead Germs	6%	9%	11%
Dead in Shell	12%	15%	16%
Hatch of All Eggs Set ..	70%	53%	27%

Further comment upon these figures is unnecessary. Porous shells and eggs with watery whites or blood spots should be avoided whenever possible. Fortunately, the last two named are present in very small numbers among eggs produced on a well-managed farm with good stock.

In the experiment referred to above all the chicks which were obtained from faulty eggs were toe-punched and the deaths and culls killed during the first month of rearing were recorded. The results were of considerable interest:—

Chicks from—

Normal eggs	5.9% loss
Blood spots	7.6% loss
Hair cracks	10.5% loss
Watery whites	22.8% loss

C. Incubation Routine.

Incubators in use today may be divided roughly for type into two groups—the table-top and cabinet machines. The incubation practices to be discussed will be largely limited to management applicable to both types, unless otherwise stated.

(1) Placing Eggs in an Incubator

Once in a while broken yolks, as detected with the candling lamp at testing time, become troublesome. Ths is caused by eggs heating up too rapidly when first put into an incubator. The sudden heating-up causes the yolk to expand too rapidly and to burst the delicate membrane which surrounds this yolk material. Speaking generally, this occurs only when eggs are very cold when placed in the incubator, so that when eggs are thought to be unusually cold they should be preheated by being placed in a warm room for some hours before being placed in the incubator. A practical method of testing the temperature of an egg is to place it against one's closed eyelid. An eyelid is very sensitive to temperature, and is therefore a useful guide.

The position of eggs on an incubator tray is not considered important provided the small end of the egg is not uppermost.

(2) Turning Eggs During Incubation.

Eggs must be turned regularly in an incubator if satisfactory results are to be obtained. If this simple operation is not carried out the yolk rises towards the top side of the egg, bringing the germ towards the shell, where it will stick and die. To avoid this, poultrymen turn their eggs at least twice daily, although quite often table-top machines are not turned for the first 24 hours after being set. This period allows the eggs to warm up completely, and the temperature in the machine to become stable.

A point which is not always realised is that, within reasonable limits, the more often eggs are turned the more chance there is of increased hatchability. This statement is supported by both the results of scientific investigation and results obtained in practice at the large hatcheries in the U.S.A., where it is not uncommon for eggs to be turned four times daily. Thus, where it is at all practicable, poultrymen are advised to turn eggs in incubators three times daily—early morning, noon, and evening.

(3) Cooling Eggs.

There is no evidence in support of the old-established theory that cooling eggs during incubation increases the number of chicks hatched, **always provided the incubator concerned is efficiently ventilated.** No attempt to cool eggs in a modern cabinet machine is necessary, as ventilation is efficient. On the other hand, it should be noted that during hot weather there is a possibility of insufficient ventilation in some table-top machines, and in this case the cooling of eggs will have a beneficial effect. Cooling, in these circumstances, supplies additional fresh air (oxygen) to the eggs, which is essental for the developing chick, while it also gives the machine an opportunity for changing its air-content. When cooling is practised it should be progressively increased from about five minutes in the first week up to, say, 20 minutes in the third week until the sixteenth or seventeenth day.

D. Temperature, Humidity and Ventilation of an Incubator.

Upon the correct adjustment of these three factors in an incubator largely depends the success or otherwise of the hatching. Incubators, climatic conditions, and the room in which the incubator is operated vary so extensively that it is unwise to lay down any hard-and-fast rules for governing these all-important factors. Each poultryman must in the first place act upon

EGG YIELD DOUBLED

—Since poultry-keeper's 100 birds were given daily dash of Karswood Spice (containing their **natural stimulant** *—ground insects.)*

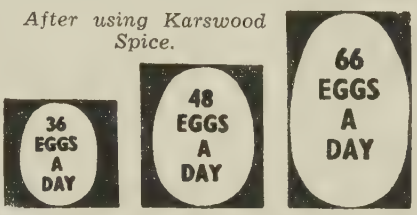
To many poultry-keepers, the last month of Winter is a period when eggs are scarce and hens (after a long spell of rigorous weather) in a poor and run-down condition. Here, then, is a letter of good cheer which shows how birds CAN be kept in tip-top health and laying eggs galore. All it is necessary to do is to start adding Karswood Poultry Spice to the mash right away.

It is thanks solely to Karswood that this gratified user's egg supply from 100 birds rose from under 36 eggs a day to 66 eggs a day—with the birds healthier than ever. To quote his own words, *"I have never had as many eggs in the winter months before, and I have kept hens over 40 years."*

Test out this wonder egg-producer to YOUR profit! You'll find it will repay its very low cost many times over in the EXTRA eggs it produces without in any way adding to your grain costs. Read the letter:—

SHOWING IN EXACT PROPORTION HOW THE EGG YIELD INCREASED

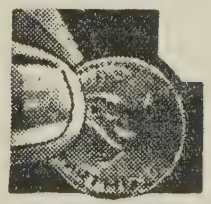
After using Karswood Spice.



BEST WINTER RESULTS FOR 40 YEARS

"I am a smallholder and at the beginning of April my 100 hens and pullets were not laying as well as they should, so I made up my mind to give your Karswood Poultry Spice a fair trial. By the end of April the birds were averaging 36 eggs a day, and a month later 48 eggs a day. By the end of June the average had risen to 66 a day, or double the quantity inside three months, and up to date (August) they are still laying the same number of eggs as June. I have never had as many eggs in the winter months before and I have kept hens over 40 years. The birds got a hot mash in the morning, not forgetting the full quantity of Karswood, as directed on the packet, and they have never looked better or healthier. The profits I now get from my poultry are a very handy additional source of income, and I intend giving Karswood the full year's trial it certainly deserves.—E.I.

(Original letter on file for inspection.)



¼D. A DAY FOR EVERY FIVE HENS IS ALL IT COSTS YOU

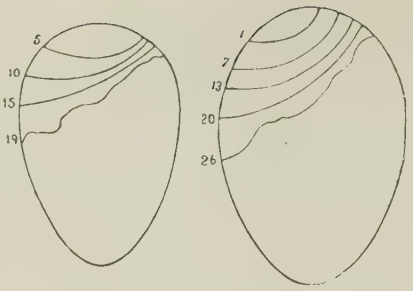
1/- packet of Karswood supplies 20 hens for 16 days; 2/- packet supplies 40 hens for 16 days; 7lb. tin (12/6) supplies 280 hens for 16 days. Try a 2/- packet.

KARSWOOD POULTRY SPICE

Increases egg-production without forcing, because it contains ground insects, but no cayenne pepper, etc.

the manufacturer's instructions when first running an incubator, and then later adjust those instructions to meet local conditions, according to the results obtained. Temperature is usually a comparatively simple problem, but humidity and the adjustment of ventilation must be watched and controlled according to the manner in which the eggs dry off as hatching progresses.

At hatching time the size and condition of the chicks should be noted, special attention being paid to the healing-off of the navel, which should be clean and not inflamed. A diagram is included showing the size of the air space at the fifth, tenth, fifteenth, and nineteenth day of incubation, and may



be used as a guide. Table-top machines are not normally fitted with humidity gauges, but they are supplied with cabinet machines.

When using machines fitted with wet bulb thermometers for measuring humidity, care must be taken that only distilled water or rain water, collected in a clean vessel, is used for the gauge. If ordinary water is used the wick attached to the thermometer will become covered with mineral salts as the water on this wick evaporates in the incubator. In time, these salts will cover the bulb of the thermometer, until finally the water in the wick ceases to be drawn up satisfactorily on to the bulb. At this stage the reading on the thermometer becomes unreliable as a humidity gauge, as it is higher than actually should be the case.

VITICULTURE—Continued from page 149.

no large rise or drop occurs in barometric pressure during those periods.

Once the boiling point of the water is found and the scale adjusted, the water is poured from the boiler and the boiler is rinsed out a few times with small quantities of the cider that is to be tested. The stopcock is then closed, and 50 c.c. of the cider are placed in the boiler; **the condenser is filled with water** and screwed on, and the thermometer is put in place, first making sure that the mercury has returned to place. The spirit flame is replaced to its previous position, and the cider is boiled. As soon as the mercury is stationary it is read off and the flame extinguished.

Refer to the scale, and opposite the boiling point of the cider (given on the middle portion) its alcoholic strength will be found, given in degrees of alcohol by volume, which has to be multiplied by 1.75 to give the percentage of proof spirit contained in it.

In the case of apple wines where the alcoholic strength exceeds 12 degrees by volume, the wine should be diluted half and half with distilled water before testing, and the result when determined is then multiplied by two to give the correct results.

(To be continued.)

—B. W. LINDEMAN, Vine and Wine Instructor, Auckland.

Cool Storage Notes

Checking Flesh Temperature of Fruit.

THE flesh temperature is the most reliable guide to the temperature of the fruit, and, taken regularly, it will materially assist the store engineer in obtaining good results with fruit held in cool storage. To enable this to be carried out it will be necessary to use a flesh temperature thermometer to check up on the actual flesh temperature of the fruit in the cases in various parts of the stack of fruit cases. This check will readily reveal any faults in the system of air distribution, whether due to wrong methods of stacking the fruit or any other cause. Flesh temperature thermometers are procurable in a metal case at 16s each.

Pears.—All pears still held in cool storage should have been thoroughly examined to ascertain whether their condition is suitable for a further period of storage, as rots may cause deterioration and loss by contact with the surrounding fruit if the first signs of the development of this form of deterioration are not detected. The sorting out and stacking of pears to growers' registered numbers will facilitate inspection and the marketing of the fruit in time to avoid losses.

Apples.—A stocktaking of all apples still held in storage should have been completed, and a careful examination of the various lines of the different varieties will be necessary in order to check up on the condition of the fruit from week to week as the season advances. Varieties such as Delicious, Rome Beauty, Statesman, Golden Delicious, Cleopatra and Rokewood should have been sorted out and carefully examined and released on the market according to the state of their maturity, size, or condition.

Many lines of apples held in cool storage contain a percentage of fruits marked by contact with the sizing machine. These marks detract greatly from the appearance of fruit, as they discolour and also encourage deterioration from rots. Regular attention should be given to the cleanliness of the bins, rollers, and all parts of the sizing machine that come in contact with fruit in the process of sizing and packing.

—A. A. POWELL, Cool Storage Officer, Wellington.

APIARY NOTES

(Continued from page 152.)

culty in keeping a foothold and many get drowned during the excitement when the fresh food is first discovered in the hives. Dry brushwood or small sticks will do quite well.

While a heavy syrup is required for storage purposes in the autumn, a lighter mixture of equal parts of sugar and water is best for brood-rearing, where required, and should be given regularly twice a week until the bees are able to maintain themselves from natural sources. For stimulative feeding just before the main honey flow, when the colonies are strong and there is a shortage of stores because of bad weather, a mixture of two parts water to one of sugar is sufficient to keep the bees in good condition until the main honey flow begins.

As a general rule, the main points to observe for safety in artificial feeding are to feed luke-warm syrup late in the day, and give no more than the bees are able to take up during the night. Disturb the bees as little as possible, and contract the entrance to all hives.

—T. S. WINTER, Senior Apiary Instructor, Wellington.

Federation of Young Farmers' Clubs

Seventh Annual Report of N.Z. Federation Of Young Farmers' Clubs

Seventh annual report of the N.Z Federation of Young Farmers' Clubs (Inc.), presented at the annual general meeting at Hamilton on July 30, 1941, by the Dominion President, Pilot Officer E. W. Barnett.

I HAVE much pleasure in presenting to you the seventh annual report of the N.Z. Federation of Young Farmers' Clubs at the end of a year which has been a most momentous one in the history of our Empire, and indeed in the history of the world. During this period we have seen many changes and have had to readjust many of our ideas, while the necessity for hard work and sacrifice has become more than ever apparent.

With the further depletion of the ranks of the farm labourers, and also the farmers, due to the increasing numbers being drawn into the Armed Forces, the burden of primary production has fallen more heavily upon those who are still on the land, with the result that working hours are, of necessity, longer, and pleasures and recreation have had to be curtailed. In such manner, however, will the war be won—by the realisation that hard work and sacrifice are needed just as much on the "home front" as in the front lines—and so long as each and every one of us continues to adopt this attitude, then we will be going far towards "doing our bit."

Difficult Year

So far as the Y.F.C. organisation generally is concerned, the past year has been one of increasing handicaps and difficulties. These have, however, been faced in the proper spirit, and despite the general depletion of club membership through service overseas and attendance at Territorial camps, the greater number of clubs have still been able to carry on. Probably the severest handicap with which the clubs have had to contend has been the shortage of petrol, which has reacted particularly to the detriment of clubs with a more or less scattered membership. The restrictions have further made it difficult to arrange transport for outside lecturers, and made it harder to secure good attendances at both club and district field days, etc.

Surprisingly few clubs have actually been disbanded, but a number have found it necessary, because of low membership and the difficulty of holding meetings, to go into recess for the period of the war. While some of these clubs may be difficult to revive, the majority have every prospect of being resuscitated after the war. The fact that six new clubs were formed during a very difficult year indicates that the value of the movement is undoubtedly recognised. One factor that has been definitely associated with the carrying on of the organisation generally is the "drive" for younger members that has been made in almost every district, and which has, in most cases, met with success.

Club Membership

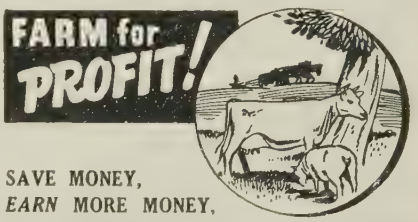
At the end of the Federation's last financial year (May, 1940) there were 203 clubs in existence throughout the Dominion, with a total membership of over 6000, the average club membership being about 30. To-day, there are 140 clubs still actively functioning, with a total membership of a little over 3500—an average of 25 members per club. Six new clubs were formed during the year, and fifteen completely disbanded, while 54 clubs have gone into recess for the period of the war. Actually, therefore, there are still 194 clubs on the books of the Federation, although for the time being, at any rate, only 140 of these are really active.

The following table sets out the position of the clubs in the four council areas:—

Council.	Clubs in 1939/40.	Disbanded during year.	New clubs formed.	In recess for war period.	Clubs actively functioning to date.	Membership of active clubs
Otago-Southland	35	1	2	8	28	518
Canterbury ..	38	5	—	6	27	753
Wellington ..	77	3	—	21	53	1,390
Auckland ..	53	6	4	19	32	865
Totals ..	203	15	6	54	140	3,526

Activities Curtailed

Major activities have of necessity, been considerably curtailed during the year, and there has been no attempt to undertake anything such as stock judging or debating on a national scale. building, ensilage-making, root crop and other competitions, and interest has been maintained in this direction. Because of the difficulties connected with the transport of outside lecturers, many clubs have been thrown more and more upon their own resources. Perhaps, in some ways, this has been all to the good, as far too many meetings have been conducted in the past as a series of lectures; members tended to become mere audiences, thus losing sight of one of the most important features of club work—the encouragement of the members themselves, and the development of their own powers



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ADDRESS J.A.8

of discussion and reasoning. Debates and discussions have come more to the fore, and local farmers and others have willingly filled in the gaps caused by the inability to obtain other lecturers.

The clubs generally have assisted to their utmost in the interests of primary production, and so far as organising and assisting in patriotic efforts and appeals is concerned, they have certainly pulled their weight. In every At the same time, both of these activities have been carried out in the clubs, and in many cases as inter-club and district competitions. Their value has been definitely proved in the past, and every effort has been made to continue them as far as possible. Various districts have also staged their own particular competitions, such as stack-district throughout the Dominion the clubs have been very much to the fore in patriotic work, and in many cases have contributed, not once, but many times through the medium of social and other functions staged for the purpose. Surplus funds have also, in a number of cases, been devoted to patriotic efforts.

Experimental Scheme

An interesting and important development of club work during the latter part of the year has been the inauguration of the Y.F.C. Experimental Scheme. This scheme, embodying the assistance of and co-operation with the Department of Agriculture, embraces the laying down of trial plots with linen flax, wheat, grass strains, fertiilsers, root crops, etc., and has been successfully launched with the aid of the District Committees, the various projects being taken up by clubs all over the Dominion. It is hoped by means of this scheme not only to interest the younger members, but also to enable them to realise that through their clubs and with very little effort they can accomplish something of value to themselves on their own farms and something additionally that is of national importance.

The fact that District Committees are, in many respects, the most important link in the chain of the Y.F.C. organisation has been further borne out by the past year's experience. Live District Committees which held regular meetings have been able to hold the clubs in their particular districts to a far greater extent than committees which met at irregular intervals, often waiting until there was a sufficient accumulation of business, in their opinion, to warrant holding a meeting. It is noticeable that in areas where the District Committees have been keen the weaker clubs have been encouraged, and that, even in the face of the many difficulties prevailing, inter-club and district activities have been promoted, and although perhaps carried out on a modified scale, have created interest and generally reacted to the benefit of the clubs concerned. In the light of the year's experience, it is a fact that this example could well be copied by all units of the Federation, including even the councils and the Dominion Executive Committee. If enthusiasm is allowed to die down, it is patent that the whole movement will suffer.

Duty to Members Overseas

So far, it has not been possible to compile a complete Roll of Honour of members serving overseas, but it is estimated that more than 2,000 members have left the Dominion to "do their bit" with the fighting forces. The task of those who remain behind to look after the "home front" is certainly difficult, and carries many responsibilities. Not the least of these is their duty to their comrades who are serving overseas, and this entails, among other things, making every effort to retain the Y.F.C. organisation intact, so that they can welcome their comrades, when they return, as an organisation, and use that organisation to assist them back to their normal lives when the struggle for freedom is over.

The formation and successful carrying on of the Young Farmers' Club in Egypt has given an indication of the keenness of its members, and their desire that the movement should still thrive, even under adverse conditions, and it becomes the duty of those who are still in New Zealand, and particularly those under military age, to see that the organisation is carried on.

Perhaps the greatest difficulty to be overcome is the fact that, because of present conditions, the general age-average of all clubs has been lowered, and that by far the greater number of the "leaders" in the clubs are away. This must seriously affect—and has already done so in many cases—the type and standard of work and activities and the smooth running of the clubs. On this account, it is apparent that many clubs will need to be "nursed" until such time as new leaders are evolved from the present younger generation. The older farmers and others, acting in the capacity of advisory members, are already doing much to help along these lines, and the duties of District Committees in this connection must be fully appreciated and carried out if the fabric and structure of the organisation are to be preserved. So far as councils are concerned, they are in a position to give a lead to the District Committees by giving assistance to such activities as may be considered conducive to the creation of greater interest in the work of the movement generally, and it is felt that no effort, within reason, should be spared to ensure that encouragement is given to districts and clubs that are in need of it.

Reviewing the position of the Y.F.C. movement at the present time, and taking into consideration the many difficulties that have had to be faced, it is, after all, a matter for self-congratulation to those of us who are deeply interested in the welfare of the movement that the organisation has passed through such a critical period and emerged, shorn of some of its units certainly, but still intact. One cannot but experience a certain amount of disappointment that a number of the clubs have been forced, at least temporarily, to abandon their activities, but this disappointment is tempered by the realisation that not only has the organisation demonstrated what can be done in normal times, but that it has also faced up to, and is carrying on in spite of, extreme difficulties during wartime. The appreciation that there is a "job of work" to be done when these troublous times are over should spur each and every one of us to make our best effort to ensure that the movement is directed along the most useful lines so as to preserve it for its greater task in normal times.

Appreciation

I wish to thank, on behalf of the Federation, the previous Minister of Agriculture (Hon. W. Lee Martin) for his continued interest in the Y.F.C. movement, and also his successor, Hon. J. G. Barclay, for his assistance. I also wish to thank the officers of the Department of Agriculture who have been of such material assistance in the active carrying on of the organisation. I also wish to acknowledge the help given to the clubs and other units of the organisation by the A. and P. societies, breed societies, agricultural colleges,, research institutes, the N.Z. Farmers' Union, and Women's Division, and to thank all others, both within and outside of the organisation, who by their interest and assistance have contributed in so many ways to the well-being of the movement. I would also give special thanks to the many senior and advisory members who have done so much to assist in establishing the Young Farmers' Clubs and to keep them running in the face of the grave difficulties experienced during the past year. At the same time I would appeal to them to give, if possible, even more assistance, as it is required today more than ever before. With the appreciation of the value of the material aid which they have so willing contributed in the past, we can look to their help in the future with confidence.

In conclusion, I would point out that we should take courage from the example set us by the Young Farmers' Clubs organisations of Great Britain, which have adapted themselves to conditions in the face of far greater difficulties than we can ever conceive, and are still carrying on and utilising their

youth and resources in the great war effort. "There will always be an England"—and there will always be farming in New Zealand, and we are looking to the Young Farmers' Clubs movement in this Dominion not only to do good work during the period of the war, but also to play its part in reconstruction and rehabilitation, and to assist in solving some of the many problems that are bound to arise after the war.

(Signed) E. W. BARNETT,
Dominion President,
N.Z. Federation of Young Farmers' Clubs (Inc.).

Inglewood Club's Field Day

By J. V. MacINTYRE, Chairman, Inglewood, Y.F.C.

AN observational manure trial under the Y.F.C. Experimental Scheme was laid down at a recent field day organised by the Inglewood Club on Mr. J. V. MacIntyre's farm at Waitui. On the same farm the members had the opportunity of viewing sheep feeding readily on ensilage. With the party were Messrs. S. Freeman, Dominion Y.F.C. Secretary, and J. M. Hopkins, District Y.F.C. Secretary.

After lunch at Inglewood, members were conducted over the Moa butter factory by the manager, Mr. L. Ross, and were shown the complete process in the manufacture of butter and packing for export and home consumption. At the conclusion of the inspection the club chairman, Mr. J. V. MacIntyre thanked Mr. Ross for showing the party over the factory.

Later in the afternoon Mr. J. M. Hopkins gave an address at Mr. R. B. Sutton's farm on the value of pampas grass for wintering cattle and sugar beet for feeding pigs. While on the farm a demonstration on Jersey cattle was given by Mr. E. J. Clough, of Waiongona, after which the members were the guests of Mrs. Sutton to afternoon tea.

A group on Mr. R. B. Sutton's farm. Right to left, starting from second in row: Messrs. E. J. Clough, J. Davidson (club secretary), J. M. Hopkins (district secretary), S. Freeman (dominion secretary), J. V. MacIntyre (club chairman).

At the conclusion of the field day the club chairman, on behalf of the members, thanked Mrs. Sutton for her kindness in providing afternoon tea, and also thanked all who had helped to make the field day such a success. Despite the unsettled state of the weather, there was a good attendance.

In wishing the club every success in the future, Mr. Freeman congratulated the club chairman on his efforts to keep the club and the Y.F.C. movement alive, and expressed the opinion that from the spirit and determination shown by the members, the Inglewood Club would be able to carry on during the war.

Alton Club's Field Day

By J. E. DAVIES, District Y.F.C. Secretary, Hawera.

UNDER the leadership of its chairman, Mr. Keith Williamson, the Alton Y.F.C. held a successful field day in the Waimate West district recently. Despite inclement weather conditions some twenty members made the journey, and were met at Mr H. E. Lloyd and Sons' apiary and poultry farm at Manaia by the district secretary.

Messrs. Lloyd and Sons spared no effort in allowing the visitors to make a full survey of the modern facilities which exist on their farm in relation to extensive poultry farming and beekeeping. The information and demonstrations given to the party regarding the management of flocks consisting of hundreds of birds were a revelation. Electric incubator rooms, rearing, feeding, and housing of the birds, the preparation for marketing of eggs, chicks, and the birds, showed an organisation of considerable magnitude.

Similar details relating to beekeeping and the preparation of honey for marketing attracted equal admiration. Furthermore, the environs of the farm presented many unusual features. Maori carvings, together with varying trees and shrubs, proved particularly interesting. From here a visit was made to the Waimate West Demonstration Farm, where the party was received by the manager, Mr. A. G. Paterson. Weather conditions prevented a detailed inspection of the farm, but a general impression of the farm's layout and the farming operations was gained.

Lunch was provided by the farm committee, after which the writer, as chairman of the committee, outlined the farm's history, stating that many important problems to the farming community had been solved there. Since the outbreak of war, all the farm's resources had been centred on increased production, and notable achievements had been made. The present season's production showed record figures—approximately 25,000lb. of butterfat were produced from 85 acres from a herd of 74 cows. In addition, over one baconer pig per cow had also been produced.

In every way the day was a profitable one, and special thanks to Messrs. Lloyd and Sons and to the Waimate West farm committee was expressed by the visitors concerned.

Dovedale Club's Annual Dog Trials

By H. A. WIN, Hon. Secretary, Dovedale Y.F.C.

THE Dovedale Young Farmers' Club once again successfully carried out their annual dog trials. The weather was rather threatening in the morning, but improved as the day went on, and there was quite a large gathering of local spectators and competitors. Lunch and afternoon tea were supplied by the Junior Branch of the Dovedale W.D.F.U., and were warmly appreciated by those present.

The club has four cups, one of which is open for Y.F.C. and Farmers' Union members, while the other three can be won only by Y.F.C. members.

The following are the results of the trials, all of which were judged by Mr. T. Christian, of Tadmor:—

Y.F.C. Heading event (Y.F.C. Cup).—T. Win's "Jock," 1; R. Win's "Mac," 2.

Open Heading event.—N. A. Win's "Spot," 1; F. J. Win's "Jock," 2.

Y.F.C. Huntaway event (Y.F.C. Cup).—I. Win's "Glen," 1; W. Kenyon's "Pat," 2.

Open Huntaway event.—N. A. Win's "Spot," 1; J. Hawke's "Bob," 2.

The Y.F.C. Championship Cup for the dog securing the most points in any Y.F.C. event was won by T. Win's "Jock," and the Open Cup for the dog securing the most points in any open event was won by N. A. Win's "Spot." Show results were: W. Kenyon, 1; M. Eyles, 2.

The club's annual ball was held in the evening, and there was quite a large attendance. The trophies for the dog trials were presented during the evening. The hall was decorated with blue and gold streamers.

Blenheim Club's Annual Dance

By COLIN R. LAIDLAW, Dance Secretary, Blenheim Y.F.C.

THE fourth annual dance of the Blenheim Young Farmers' Club was held in St. Patrick's Hall, Blenheim, and proved an outstanding success. The attendance numbered approximately 350, including a party of fifty West Coast farmers who were on tour in the district at the time. During the evening speeches of welcome were made by Messrs. S. W. Jordan, President of the Farmers' Union, and C. R. Laidlaw, Chairman of the Blenheim Y.F.C., and were replied to by Mr. Mulcare, the leader of the visiting party. Members of this party were loud in their praises of the hospitality extended to them.

The catering was in the hands of the W.D.F.U. senior and junior branches, and a sub-committee consisting of Mesdames R. W. Thomson, R. T. Laidlaw, E. W. Rose and M. Grace (senior W.D.F.U.) and Misses Shirtliff and M. Walsh (junior W.D.F.U.) worked hard with the supper arrangements. They were assisted by other W.D.F.U. members, the Y.F.C. members helping with the serving. A "hand round" supper was provided, and music was supplied by Queenie O'Sullivan's orchestra.

The meeting night before the dance was devoted to decorating the hall in the Y.F.C. colours of blue and gold, and on the stage were large bowls of autumn flowers. Work put in by the club members resulted in the floor being in first-class dancing order.

The net profits of this dance are being utilised to send parcels to members of the local club who are serving overseas with the 2nd N.Z. Expeditionary Forces.

Among the Clubs: Reports on Activities

WESTERN SOUTHLAND.

Drummond.—Business meeting. Report on recent annual meeting of Otago-Southland Council at Dunedin.

Orepuki.—Discussion on Y.F.C. Experimental Scheme; plots to be laid down by two members. Arrangements for club field day. Short talks by members to be feature of next meeting. Mr. W. R. Harris, of Invercargill, Chairman of the Otago-Southland Council, addressed the meeting on "The Y.F.C. Organisation," and also gave an interesting lantern lecture on "Manures and Crops." A stock judging competition was held at the Pahia Annual Show; Mr. G. Herron explained the way to set about judging a beast, after which members and others were issued with judging forms and judged a line of heifers. Messrs. G. Herron and J. Ronald then judged the animals and the members compared points, etc. There was a total attendance of 32 at the judging.

EASTERN SOUTHLAND.

Crookston.—Annual meeting. Officers elected: Advisory president, Mr. A. Pullar; chairman, J. Evans; secretary, J. D. Sim; treasurer, M. Conbrough.

Five Rivers.—Report on recent dance. Address by Mr. T. Reidy on "The Training of a Sheep Dog."

Otama.—Films of agricultural interest exhibited by Mr. F. J. Holden, Department of Agriculture. At the previous meeting Messrs. J. W. Woodcock and W. Faithful, Department of Agriculture, gave talks on "Linen Flax," stressing the urgent need for areas to be sown.

SOUTH OTAGO.

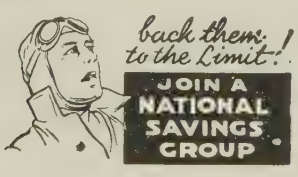
Clutha Valley.—Talk by Mr. F. Mosley on "Farming" and also "Stud Sheep"; the speaker made special reference to the picking out of good and bad points when breeding, and also dealt with the treatment of foot-rot.

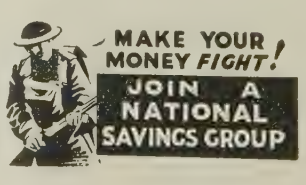
CENTRAL OTAGO.

Upper Clutha.—Talk by Mr. G. C. Calder, Department of Agriculture, on "Limiting Factors to Production."

DUNEDIN.

West Taieri.—Tree planting scheme discussed. Mr. S. H. Saxby, Department of Agriculture, addressed the meeting on the Y.F.C. Experimental Scheme.





NORTH OTAGO.

Five Forks.—Discussion re club debate. Club Roll of Honour to be kept. Address by Mr. W. R. Hudson on "Lincoln College."

SOUTH CANTERBURY.

Fairlie.—Club debates: (1) "That Freehold Tenure of Land is Preferable to Leasehold Tenure"; the affirmative team, consisting of C. Whatman and D. Stanley, was given the award. (2) "That the Spending of Money on Sport should be Curtailed for the Duration of the War"; this was won by the negative team, B. O'Neill, J. E. Williams, and C. Stanley. Mr. C. Millar acted as judge. At the previous meeting Mr. Grant, of Timaru, gave a talk on "Wool." Officers elected at the annual meeting: Advisory president, Mr. W. Scott; chairman, D. Lundie; secretary, M. J. Kirk; treasurer, J. E. Williams.

Geraldine.—Discussion on Y.F.C. Experimental Scheme. Arrangements for inter-club debate with Milford. Talk by Mr. F. Ward, A.M.P. Society, Timaru, entitled "Farm Problems," dealing with the financial side of a farmer's business. At the previous meeting Mr. C. C. Leitch, Department of Agriculture, gave a talk on the Y.F.C. Experimental Scheme, explaining the details of the various projects.

Maungati.—Report by B. Evans on the recent meeting of the South Canterbury District Committee. Arrangements for a debate. Talk by the Rev. Wilson on working his passage from New Zealand to London, and also his impression of Edinburgh.

Milford.—Arrangements for inter-club debate with Geraldine. Preliminary arrangements for stock judging competition to be held this year in North Canterbury. Club debate: "That Farming in New Zealand Offers the Most Attractive Career for a Young Man." Speakers: L. Livesay, R. Bisdee, and J. Dale (negative); N. Palmer, G. Caithness, J. Bolderston, and G. Crossman (affirmative). The judge, Mr. G. Mulligan, awarded the decision to the negative team. At the previous meeting Mr. C. C. Leitch, Department of Agriculture, spoke on the Y.F.C. Experimental Scheme; he also outlined the progress made in the Department's scheme of seed certification and efforts towards crop improvement.

Pleasant Point.—Profits from recent dance to be utilised in sending parcels to members overseas; the dance was again an outstanding success this year, £42 being taken at the door. Club debate, "That Farming Today is More Difficult than it was Thirty Years Ago." Speakers: F. R. Clarke, W. B. Cartwright, E. Chittock, and J. Olliver (negative); W. J. Skinner, D. Shires, R. S. France, and J. W. Crombie (affirmative). The judge, Mr. D. W. Onenham, gave his decision to the negative team.

Waihaorunga.—Annual meeting. Election of officers.

MID-CANTERBURY.

Ashburton.—Business meeting. Election of new secretary. Final arrangements for inter-club debate. Report on District Committee meeting by G. Watson. At the previous meeting a talk on the Y.F.C. Experimental Scheme was given by Mr. R. Inch, Department of Agriculture.

Hinds.—Presentation to E. Rhodes, who is shortly to be married. Teams selected to take part in the inter-club debate. Talk on "Debating" by Father Daley. Club debate, "That New Zealand Devotes too Much Time to Sport." Speakers: G. Watson, S. W. Keeley, and R. Watson (affirmative); D. Chisnall, C. Beaver, and E. Rhodes (negative). Father Daley acted as judge and gave his decision in favour of the negative team.

Methven.—Each member spoke for five minutes on "Is the Irrigation Scheme a Waste of Public Money?" or "Will the Size of Canterbury Farms Decrease when the Irrigation Scheme Begins to Operate?" The best speakers were: R. Penny (79 marks), A. McKay (78 marks), and R. Wightman (76 marks). Mr. Kennedy acted as judge.

CHRISTCHURCH.

Darfield.—One new member elected. Lecture by Dr. Weston, Lincoln College, on "Farm Accountancy."

Springston.—Exhibition of films depicting the recent Territorial manoeuvres in South Canterbury.

NORTH CANTERBURY.

Amuri.—Arrangements for annual ball, profit to be devoted to patriotic funds. Ten-minute talks to be given by members at next meeting. Lecture by Mr. Bevin, Lincoln College, on "Pasture."

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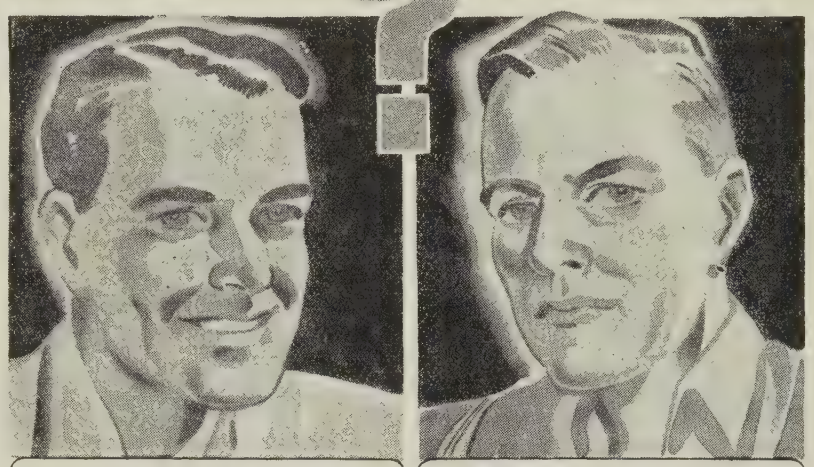

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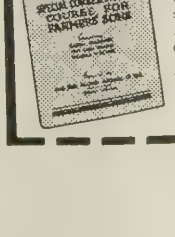

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..... J.A. Ag. 41

Cust.—Members elected to hold office temporarily while officials of the club are in camp: C. Talbott, secretary; E. Torrance, treasurer; G. Cattermole, reporter. The remainder of the evening was devoted to a "Question Box."

Scargill-Omihi.—Talk by Mr. A. H. Spratt on "The Work of the Stock Firms."

NELSON.

Moutere.—Challenge received from the Dovedale Club to a debate. Address by Mr. How, Herd-Improvement Officer, on "The Breeding of Dairy Cattle; Testing and Recording of the Herd"; the speaker also dealt with "Diseases of Dairy Cattle." This address was given to a combined meeting of the Y.F.C. and Farmers' Union.

MARLBOROUGH.

Blenheim.—Letter of thanks received from the principal of Marlborough College in connection with medals given by the club instead of miniatures for the Y.F.C. Cup at the college. Address by Pilot W. G. Thurston (an old member of the club) on "Life in the R.N.Z.A.F."; and "Farming in the North and South Islands."

Flaxbourne.—Arrangements for annual dance. Talk on "Rationing of Super" by Mr. D. R. Wilkie, Department of Agriculture, after which a mock court was held.

WAIRARAPA.

Masterton.—Experimental scheme discussed; members to undertake various trials. Annual dance to be held. Lecture by Mr. J. E. Duncan, Department of Agriculture, on "Wool"; Mr. Duncan also exhibited a sound film entitled "The Story of Wool."

HOROWHENUA.

Johnsonville.—Address on "Y.F.C. Affairs" by Mr. S. Freeman, Dominion Secretary, who also exhibited some sound films on agricultural and topical subjects. Social evening held in the Ohariu Hall on the occasion of a club member leaving for overseas; presentations were made on behalf of local settlers and the members of the club.

Levin.—Selection of teams for district stock-judging competition. Talk by Mr. P. McGregor on "Seasonal Stock Troubles."

MANAWATU.

Bunnythorpe.—Discussion re Y.F.C. Experimental Scheme. Decided to support Feilding Club's proposal for stock show in November. National Savings Account to be opened with sum of £10, to be supplemented by monthly subscriptions from each financial member. Remit to be forwarded to District Committee recommending that all clubs open a National Savings Account. Address by Mr. A. H. Faulkner, manager of Glaxo Laboratories (N.Z.), Ltd., on "Milk and its Products." The previous meeting took the form of a Parents' and Friends' Evening; the Dominion Secretary, Mr. S. Freeman, and the District Secretary, Mr. H. de O. Chamberlain, were present and exhibited some interesting sound films. Supper and dancing followed.

Kairanga.—Discussion re "Y.F.C. Experimental Scheme"; club to support the project and lay down trials of linen flax, mangolds, and sugar beet. Films of agricultural interest exhibited by Mr. H. de O. Chamberlain, Department of Agriculture.

Kimbolton-Kiwitea.—Arrangements for annual dance. Talk entitled "A Trip to the Argentine," by Mr. J. H. Williamson.

Oroua Downs.—Arrangements for field day. Club debate, "Would the Entry of the United States into the War be of Advantage to the Allies?" The affirmative team secured the decision. At the previous meeting sound films were exhibited by Mr. H. de O. Chamberlain, Department of Agriculture.

Rongotea.—Chairman and secretary appointed to Feilding Y.F.C. Show Committee. Arrangement for dance. Impromptu speeches by club members.

Whakarongo.—Lantern lecture by Dr. Yates, Massey College, on "Farm Shelter"; members of the public were present by invitation. At the previous meeting short talks were given by all members present.

WANGANUI.

Bulls.—Correspondence and discussion re district essay competition and district debating contest; decided to hold senior and junior classes in both. Club to enter for club efficiency competition. Visit to Flock House to be arranged for fruit-pruning demonstrations, etc. The district secretary, Mr. A. R. Dingwall, assisted in discussion. He also gave a talk on the Y.F.C. Experimental Scheme, and commented on the seven autumn-sown linen flax trials that had been undertaken by the club and inspected by him that afternoon.

Hunterville.—Annual meeting, Officers elected: Advisory president, Mr. W. K. Morton; chairman, P. Weston; secretary and treasurer, E. McLachlan.

Mangaweka.—General business. Practice debate for district debating contest. At the previous meeting the district secretary, Mr. A. R. Dingwall, explained the Y.F.C. Experimental Scheme and the district efficiency competition.

Marton.—Annual meeting. Officers elected: Advisory president, Mr. H. G. Stewart; chairman, B. Grey; secretary and treasurer, H. Morrison.

SOUTH TARANAKI.

Alton.—Arrangements for dance. Talk by Mr. J. E. Davies, Department of Agriculture, on "Increasing Production." A field day was held, members visiting Messrs. Lloyd Bros.' poultry farm and apiaries, Manaia, and the Waimate West Demonstration Farm.

NORTH TARANAKI.

Hillsborough-Tarurutangi.—Arrangements for euchre party. Debate to be held at next meeting. One new member enrolled. Address by Mr. P. O. Veale, District Chairman, on "Poison Gases in Warfare"; the speaker described the types of gases used and the methods of preventing casualties. At the previous meeting a Dominion Secretary, Mr. S. Freeman, spoke on Y.F.C. affairs generally, and also exhibited some sound films.

Inglewood.—Address by Mr. F. L. Knowles, Herd Recording Officer, dealing with the history of the herd-testing movement in New Zealand. At the previous meeting the Dominion Secretary, Mr. S. Freeman, gave a talk on Y.F.C. affairs, and exhibited sound films.

Mangorei.—Arrangements for a debate. The Dominion Secretary, Mr. S. Freeman, spoke on Y.F.C. affairs, and exhibited sound films. The district secretary, Mr. J. M. Hopkins, and Mr. F. L. Knowles, Herd Recording Officer, were also present.

SOUTHERN HAWKE'S BAY.

Ballance.—Presentation to a member, and also a former member, who are going overseas. Decided that a letter be sent to Mr. F. J. Holden, former district secretary, who has been transferred to Gore, expressing appreciation of his services to the Y.F.C. in the district.

Mangatainoka.—Arrangements for dance profits to be given to patriotic funds. Letter of appreciation to be sent to Mr. Holden, the former district secretary, for his work in connection with the club. A collection taken up to assist the War Weapons Week realised £1 1s. Talk on "Banking" by Mr. Smythe.

Woodville.—Sound films of agricultural and general interest exhibited by Mr. H. de O. Chamberlain, Department of Agriculture.

CENTRAL HAWKE'S BAY.

Onga Onga.—Mr. J. W. Palmer, district secretary, spoke on Y.F.C. affairs and exhibited sound films. There were six visitors present by invitation. At the previous meeting it was decided to appoint "road-organisers" to contact eligible members, etc. Teams for debating were selected. The advisory president, Mr. E. S. Bibby, gave a short talk on "Poultry."

Tikokino.—In connection with a "membership-drive," Mr. J. W. Palmer, district secretary, spoke on Y.F.C. affairs and exhibited sound films. About thirty members of the W.D.F.U. and Farmers' Union were present by invitation.

NORTHERN HAWKE'S BAY.

Meeanee.—Informal debate held with the idea of encouraging the younger members; subject, "Tractors v. Horses." At previously unreported meetings Mr. Teague, of Wairoa, gave an interesting lantern lecture entitled "With a Camera in the South Island"; Mr. W. J. Brownlee, District Chairman, spoke on Y.F.C. affairs; the Dominion Secretary, Mr. S. Freeman, addressed the meeting; and Mr. Stewart exhibited films dealing with a trip in the South Seas, and also agricultural implements, tractors, etc.

Wairoa.—Arrangements for Y.F.C. ball. Lectures by Mr. E. J. Callaghan, Government Veterinarian, on "Common Ailments and the Care of Station Horses."

POVERTY BAY.

Gisborne.—Address by Mr. F. Wise, who has recently returned from America; the speaker gave an interesting talk on the U.S.A. and showed a film in natural colour of his trip.

Te Karaka.—A. D. N. Manuel appointed acting secretary while Mr. Campbell is in camp. New member elected. A letter received from Mr. E. M. Bates, former district secretary, who is now acting as an instructor in the R.N.Z.A.F. at Harewood. Members gave short addresses, the first of a series for Mr. W. C. Bull's trophy for the most improved speaker. Members spoke as follows:—W. Pevreal (cotton), J. Bagley (soldering), N. Duncan (farm finance), A. Manuel (oil), B. Campbell (shepherds), L. Palmer (timber).

TE KUITI.

Mokauiti.—Films exhibited by Messrs. K. M. Montgomery and H. Woodyear-Smith, entitled "Pollination," "Salvage from the Sea," "Sydney Harbour Bridge in Construction," and "Westward Ho."

Otorohanga.—Films exhibited by Mr. H. Woodyear-Smith dealing with the forward trend of the farming industry.

Te Anga.—Addresses by Messrs. K. M. Montgomery and H. Woodyear-Smith. A varied selection of films was exhibited.

WAIKATO.

Tauhei.—Business meeting. Arrangements for dance to be held on the occasion of the forthcoming marriage of a club member, G. Smith.

Te Awamutu.—Field day on Mr. W. McGill's farm, at Ngahape; Mr. Rogers, owner of the Mountley Stud, Ngaruawahia, gave a lecture on "Pig Husbandry," and also demonstrated the fine points of a pig and gave the points to watch for when buying.

WESTERN BAY OF PLENTY.

Kati Kati.—Business meeting. Arrangements for annual ball and also for Y.F.C. Patriotic Ball to be held in Tauranga.

Paengaroa.—Arrangements for the club's birthday party. Field day to be held on tree pruning. Address by Mr. Blackmore on "The Club's First Tour of the North."

AUCKLAND.

Franklin.—Team selected to debate against Mauku Club. Impromptu debate among members. Mr. H. Woodyear-Smith discussed debating and judged the club debate.

WARKWORTH.

Kaukapakapa.—Arrangements finalised for field days at the Nikau Bacon Factory and on the club's tree planting area. Report on trip to Ruakura Animal Research Station by B. Jones and W. Lapage-Robbie, followed by full discussion among members.

WHANGAREI.

Matarau.—Chairman referred to the impending transfer of Mr. E. B. Glanville, district secretary, to Auckland, and mentioned his popularity among club members; Mr. Arnold, his successor, was welcomed. Sound films, depicting "Rats," "Life-cycle of a Blowfly," and "A Tour of South-west England," were exhibited by Messrs. Glanville and Arnold.

DO YOU SNORE?

Defects of the Nose and Throat In Children

Contributed by the Department of Health.

IT has been written: "Sleep quietly and the world sleeps with you. Snore and you snore alone." There is more truth than poetry in this statement. Snoring seems to be particularly a human attribute, and the further we advance in civilisation, according to an overseas authority, the more we advance in snoring.

There is little in medical literature relating to snoring, nor is it a term for poetic effusion or a subject for literary romanticism. Snoring as a subject for conversation in polite society is also taboo. It is not generally discussed, because the snorer is not aware of the fact that he snores, and the one who hears the snoring is generally too much annoyed even to discuss it. Snoring is a sore affliction—to the hearer. The more we think of snoring, the more we believe that the subject lends itself to a candid though, mind you, amiable discussion.

Snoring may be looked upon from three standpoints—the aesthetic, the social and the medical aspect.

Aesthetic Aspect

While, in the case of the majority of offenders, snoring is merely the production of a weird, hideous noise, some snorers are veritable sound artists with whom the process of snoring is a fine art. From the musical point of view, snoring runs the gamut of all notes and scales, representing every sound in Nature or invented by man. The sounds may be high pitched or low pitched; they may be tenor or bass in quality. The general consensus of opinion, however, is that snoring as a musical venture is a failure.

The sounds produced by snorers have been classified as follows:—Booming, sizzling, raucous, hissing, puffing, tearing, rending, scraping, rasping, gargling, sawing, or a combination of all. The snorer may be trying to give vent to his interpretation of a song, or it may be in the nature of a symphonic composition of the ultra-modernists type, a sort of cubist expression of music. We are told that our advanced composers believe in dissonance or cacophony. Snoring is that. Therefore, we think we have made a fair argument for snoring as one of the fine arts.

Social Aspect

Socially, snoring is either a tragedy or a comedy, as we look at it.

Scene.—Husband and wife, newly married, at the breakfast. Husband asks solicitously how wife has slept.

"Not very well, John," she replies.

"Why, my love?" asks the husband anxiously.

"Well, you know, dear," she replies. "I just don't like to say—but—

"But what, my dear?" he insists.

"Well, John," she says, "since you must know, you snored horribly last night."

"What! me snore?" blusters the bridegroom.

"Oh, John dear, don't be angry, but it is true."

"Why, my dear, I never snore," protests the husband.

"But, John, you kept me awake snoring."

"You must be mistaken. Or it may have been that I had a little cold, or perhaps I slept on my back, but as a rule I never snore."

"But, John, why deny it? I heard you."

Some snorers keep their neighbours awake, especially in large apartment buildings. The type of snoring occurring in a railway sleeping car should be of profound interest to the research worker in snoring. Somehow or other, the railway sleeping car is a favourite place for the snorer. Perhaps it is the contiguity of other sleepers that brings out the snoring. But whatever the reason, the sleeping car snorer has stirred murder in the hearts of many. That more killings have not taken place on account of snoring is due to great emotional control.

Medical Aspects

Here, it should be noted, that it is the medical phase of snoring which we have been trying to get at all the

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time. Now, snoring is breathing with a peculiar rough noise in sleep due to vibration of the soft palate and uvula. It is a hoarse, laboured respiration produced by deep inspiration and expiration through the nose and open mouth. It usually occurs when sleep is most profound, for it is during deep sleep that complete relaxation takes place.

The sleeper, if normal, sleeps with his mouth closed, breathing naturally through the nostrils, which prevents the vibration of the loose tissues of the throat. The mouth breather in the relaxation of deep sleep is usually the one who snores, but it is possible for snoring to occur with the mouth completely shut and nothing the matter with the nasal passages. The tendency is increased, however, by any obstruction of the nasal airway, the result of polypi, tumor growths, enlarged turbinates, bony deformities, or sinus infections. Chronic inflammation of the nasal linings may cause an enlargement of the tissues sufficient to obstruct the nose. Lying on the back is more apt to induce snoring than lying on either side when sleeping. Of course, if one is an habitual snorer, any position assumed in sleep may not mitigate the snoring.

As a rule, the snorer is not aware that he snores. His suspicion should be aroused, however, if he wakes up in the morning with a dry mouth and a tongue like leather. That is due to the drying of the secretions of the mouth by mouth breathing.

Aside from the aesthetic and social aspects of snoring, the medical side is of great importance to the snorer. As we have pointed out, snoring is usually an indication of some disturbance in the nose that requires the care of a physician.

Snoring in Children

In children, snoring is commonly an indication of enlarged adenoids and tonsils. Adenoids, especially, are the cause of mouth breathing and, consequently, snoring in children. Special attention should be paid to the care of these conditions in children, as the longer the delay, the more serious the complications likely to follow. Adenoids and enlarged septic tonsils are open doors for disease germs. Neglect of these conditions may mean permanent delicacy of body and dullness of mind.

Enough has been written to indicate that snoring and mouth breathing are, as a rule, due to certain physical defects which should be corrected. The family doctor should be consulted to determine the cause or causes and to suggest the needed treatment.

THE Good Neighbour

BY MARY

From Me To You

WHO said that miracles do not happen these days? Why, I saw two this morning! Two red earthenware pots stand on my sunny window sill, and, bending over them to-day, I saw two white shoots unfolding their delicate petals to the sun. Hyacinths — white hyacinths. The magic of spring once again! Once more the earth stirs, and puts forth new life—in the days to come two shining hyacinths will give their glory to the world . . . two white hyacinths, on MY window sill. I can never believe that there are no such things as miracles when spring comes every year. Do you remember the first spring song ever written —and still the loveliest, too.

"For lo, the winter is past,
The rain is over and gone,
The flowers appear on the earth,
The time of the singing of birds
is come."

Every word was so true when this Song of Solomon was written so long ago—to-day it rings as true as ever.

Spring flowers are early this year. Have you ever paused to think that thoughts and flowers are very much alike? Both can be beautiful, and both can be imperishable — the thought in the mind, and the beauty of the flower will live long after its petals are withered and dead. Sometimes I like to think that every word and thought bestowed on me through the years by my dearest friends, live forever as fragrant flowers blossoming in the garden of my mind. Each sweetest thought is a fragrant bloom, each moment a wide-eyed flower, an everlasting flower of enchantment, blooming in riotous delight in memory's garden.

Few people have learned the art of collecting happy memories; many collect old china, and prints, and books—all good and lovely things, but fragile and perishable. But happy memories are indestructible possessions which nothing can take from us—time only adds to them, mellows them, hallows them. That is what I mean when I say flowers and thoughts can both be beautiful and everlasting things, and it is this time of year, when the earth is athrob with the glorious expectancy of spring, that we realise more keenly than ever that the really miraculous and beautiful things in life, somehow, and curiously, are found in such simple things as white hyacinths.

Mary

Mary's "At Home"

FRIEND MARY,—May I, too, join your "At Home"? Note I write "friend," because your last two messages helped me so much in your "From Me to You." I always love to think that friends are given to us for two purposes—friends to help us, and also other friends which we are meant to help. I live in the country, but have been blessed with many friends all over our islands, whom I have learnt to know mainly through pen and paper, so I just want you to know that I have already found your page a friend that is meant to help me. One writer truly says, "The true friend seeks to give, not to take, to help, not to be helped, to minister, not to be ministered unto."
—Country Girl, Southland.

I WOULD like to tell you of an infallible cure for the "nothing's really worth while" feeling and for the war blues which beset us all at times. I find my comfort in a small girl, not my own. She came into our childless household a year ago, during those terrible days when France fell, and when each morning we awoke with a great weight on our hearts, dreading what the day might bring, we found in our wee girl, then at the enchanting age of three, that distraction from worrying which we could not find in our books, music, or other occupations. Who could give thoughts to fretting with a strange little personality to watch unfolding, a child's endless, artless questions to answer, a little playmate always wanting to play? Truly, loving and caring for a child is the best possible occupation in time of stress, and the greatest encouragement to believe that a better world will yet arise, since it is this generation that will build it. But, oh, how a small, confiding child in one's home wrings

the heart with the thought of the little children of Europe!—**Marguerite, Havelock North.**

SOME people pity us women who live in the country, but they do not know it as those who love it do. In these days of stress I feel it is good to set aside for a while the everyday tasks and go out of doors into the quiet, to see and to listen in the beauty of the world about us. How glorious are the sunrises and sunsets; the cloud shadows on the hills and valleys, the starry skies at night, the soft light of the moon. Gone are our jarred tempers and nerves, for God has given us back our necessary strength and poise that we need in these days of anxiety. We may only be able to spare a few minutes, but it is so worth-while.—**Peggy, Pleasant Point.**

I DIFFER from our friend "John-in-the Middle" re trees and their passing, because I love to see a harvesting of anything, fulfilment as it is. To see the saws ripping musically through sturdy logs is ever a joy as one thinks of the many and valued uses of the finished wood. If we didn't fell them, what chance have the young seeds and saplings coming in behind? Nature has her way, and we all grow old.—**Mrs. Vee, Waikato.**

I AM a firm believer in the fact that our lives are mapped out for us when we are born. We might go quite a long way down one road without seeing the end, but, given time, the reason usually appears. Looking back over my ups and downs, I can now see the reason for everything that has happened, although often at the time I wondered just why I had to do that particular job. I always try to remember that accidents never happen—everything that happens is meant to happen, although sometimes it is to teach us a lesson, and sometimes to teach someone else, through us, a lesson.—**Biddi-Jan, Redcliffs.**

YOUR EYES

Star-bright and beautiful your eyes,
My very dear,
Surely the gods themselves knew not
Such eyes so clear,
And surely no nymph or goddess
Ever will see
Such shining lamps of love as
Your eyes to me.

THE shortest day is over, but not yet the cold ones. Indeed, we have most of us moralised over the old "as the days lengthen, so the cold strengthens." It always seems such a pleasant part of children's education to learn to care for small creatures. I wonder if any of your good neighbours think this old verse worth teaching children to repeat:

The wee birds sit among the trees,
Their fare this day is sparin',
The cauld an' bitin' frosty winds
We human mortals share in.
The guid folks help the wee birds tae
A crust they'll welcome shairly.
Extend the human touch this day,
For this is winter fairly.
—**Manaia, Wanganui.**

AFTER reading the points stated as necessary for the perfect wife, I found them entirely unworthy suggestions for women of our age, which gives the woman the same rights as the man has monopolised for so long. Maybe I take things too seriously, but a woman who believes in the equality of the partners in marriage, who believes firmly that the wife should go shoulder to shoulder with her husband, cannot but think those rules frivolous. The women of today are toys no more, nor do they see in their husbands tyrants who have to be petted and spoiled in order to keep them good-humoured. In particular, the New Zealand farmer's wife would not dream of seeing herself in such a light, as she so valiantly takes her share of the hard work on a farm. These wives, who are so generous in their simple and uncomplaining acceptance of hard labour and long hours in the kitchen and shed, they have no need to purr round their husbands like selfish kittens. They are the best a wife can be: loyal comrades to their men. Who, seeing this, asks for perfection?—**Heidi, Kati Kati.**

IT was great fun writing my entry for the competition, although I got pretty bored with my "perfect wife." Wouldn't it be horrid to live with a person who was perfect? You would always know what she was going to say or do, and how she would think and speak. Thank goodness it is not natural for a human being to be perfect. Farm life is wonderful, but I often wish that there was more time for other things. Nevertheless, the peace of the country, the lovely views, and loads of fresh, pure air, together with many other things, are of more than ordinary value, don't you think? —**D.M.R., Waikato.**

THE boys in Egypt must have some fun sometimes, anyway! I had a letter from a soldier friend who had spent some of his leave in Cairo. Walking down the street, he found himself besieged by the natives, begging him to buy their wares. He didn't understand their jabber, but in an effort to rid himself of them, he finally bought some unknown article from a native woman. The coins changed hands, and imagine the soldier's surprise when the native woman unstrapped the baby from her back, and handed it to him! It must have been hard work for that lad to persuade the native that he didn't want a baby to take back to camp!—**Billie, Blenheim.**

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Flowers Are Better Than Tonics

ANYONE who has spent long hours in a hospital will agree with me that flowers are better than tonics. Nothing is a better cheer germ than a bunch of flowers, be they common daffodils, or exquisite, expensive orchids. No home really lives unless there are flowers in it, and without very much trouble you should be able to keep the flowers blooming in your garden throughout the year so that there is always something to put in your vases.

But there is a definite art in arranging flowers. Do have a good selection of vases from which to choose when it is time to arrange your blooms. Keep a tall crystal vase for slender blooms, mass your daffodils in deep bowls, float a rose, alone, in a witch bowl, use leaves to set off the beauty of the blossoms.

Jugs can be ever so lovely too. I have a friend who is the lucky owner of a tall, black jug, and it is an everlasting delight to see the flowers that grace this jug—tall sprays of pink japonica, great bunches of jonquils, slender balloons of Iceland poppies—I have seen and loved them all in it. For smaller flowers, make use of your cream jug, or perhaps you have a crystal dish?

Floating bowls are always popular, but have you used the posy bowls that are so adaptable? A circle of purple pansy faces smiling up from a posy bowl—what could be lovelier? Nowadays vases of the wall-pocket type are becoming very popular—more perhaps in Windy Wellington than elsewhere, for, you see, they have the very definite advantage of not upsetting at the first breath of wind! Properly placed in a dark corner, they will rapidly transform it into a space of shining beauty.

Do be kind to your flowers when you have picked them—remember that Iceland poppies like their stems burnt, roses appreciate a good hammering at their stems, and violets drink through their heads, not their stalks. So be kind to them, in particular, and give them a nightly soaking in cold water, to which you have added an aspirin, if you want them to last.

Choose your background carefully when placing your flowers—consider the colour of your flowers against the wallpaper. Pewter jugs are ideal for gay marigolds, or perhaps tawny wallflowers.

Next time you are doing the flowers, have a hunt through your cupboards, and bring out all your vases. bowls, and jugs. Try a little re-arranging of ideas, and just see how it reacts on you!

Flowers are better than tonics—keep your home full of them, now spring is here.

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SPRING IS HERE!

So Spruce Up Your Wardrobe

SPRING is here, spring is here! Well, perhaps not for keeps just yet awhile, but it won't be long before it is really mild enough to sally forth once again in costumes and new spring suits. New spring suits, did I say? Well, perhaps you, like me, feel that your spring suit this year won't be a new one, but don't despair—there's a lot to be said for celaning carefully those clothes which you have. Here's how.

Your costume will, of course, be the first on the cleaning list. Costumes are invaluable, always. Is yours one of the navy serge type, which has gone shiny in patches? So annoying, isn't it, when it looks like new except for one or two shiny spots? But don't despair—here's how you can remove the shine. Dissolve a little powered alum in water in the proportion of one part of alum to 16 parts of water. Sponge the shiny parts with this preparation. Now press the garment all over with a damp cloth and very hot iron, and finish with a good brush with a stiff clothes brush, making sure that you brush the material up, and not down. If the shiny patch is very bad, you can try rubbing it gently with the finest grade of emery paper, being careful to rub only the way of the pile, and very gently too.

Now to your coat. Rub it all over with a cloth dampened in a solution of ammonia and water, and then press with a damp cloth and hot iron. Perhaps it has a fur collar which needs a little attention. Hot bran will do the trick. Place dry bran into two pans, and thoroughly heat them in the oven. Rub a handful of the hot bran into the fur, and gently shake out again. Repeat this until the portion of the fur is quite clean. The secret of success in using bran is to make sure it is kept as hot as you can handle it. Leave one pan in the oven while you are using the other, and change them frequently. Be careful to spread plenty of newspaper around before you begin, for bran is very light and is easily scattered.

Did you have one of those white macintoshes that were so popular last winter? It looked so fresh when it was new, but now it is a little grubby, and you are wondering perhaps whether it will see you through a second winter. Moisten an ounce of fuller's earth with a tablespoonful of spirits of turpentine, then mix in half an ounce of salts of tartar, and one ounce of potash. Mix the whole into a stiff paste with a little soft soap. Apply this mixture to the macintosh with a piece of flannel, rubbing until it lathers, and then sponge it off.

Spring is in the air with Virginia Grey's new suit of blue wool crepe. The leaves are white leather, the very latest in trimmings for this Metro-Goldwyn-Mayer star. The suit is two-piece with gored skirt, and dressmaker coat with the leaf trim instead of buttons. Two leaves also appear on each cuff with an edging of white pique for crispness, and this pique note is repeated in the turn-down lapels of the suit. Her turban is made of wool crepe, twisted into a flat doughnut, and trimmed with the leather leaves.

Now your gloves. If they are suede, you should send them to the cleaners, but kid or leather gloves can be cleaned easily at home. Make a good soapy lather with warm water, spread the gloves on a board, and rub them carefully with a piece of flannel moistened in the lather. Be careful not to get them really wet, and dry them in the sun. Petrol, too, can be used. Rub the fingers with a piece of flannel dipped in petrol. When all the fingers are clean put the gloves on a plate, pour a little petrol over them, and rub gently. Finally, dip the gloves completely in petrol to rinse them of any dirt. Now rub the gloves well with a dry cloth, for if any of the petrol stays on it may discolour them slightly. Dry outside, in the shade, to get rid of the odour. And remember when you are using petrol never to go near an open flame—it is very much safer to do it out-of-doors.

Lastly, we come to your felt hat. Here, we use petrol again, and plenty of it, rubbing the hat carefully all over, and particularly in any worn spots, with a piece of flannel soaked in petrol. If you want to clean a white or light coloured felt hat before putting it aside for the winter prepare a paste of magnesia and cold water. Apply to the hat with a brush, and allow to become thoroughly dry. Now brush the magnesia away gently, and your hat will be like new again.

So you see, with careful cleaning, you will perhaps be able to get quite a lot of wear out of your last season's wardrobe.

Make Your Brushes Last Longer

A LITTLE extra care, and most of our brushes would last double their usual time—an important point these days. Shaving brushes, for instance, should always be hung head down after using, and this is easily arranged by looping a cord round the handle and hanging the brush from a hook.

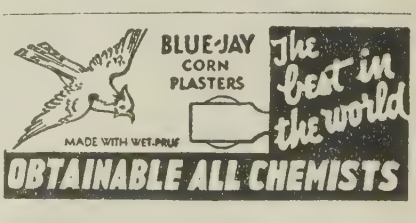
New brooms and brushes will wear better if, before using them at all, they are soaked overnight and then dried thoroughly the following day.

Remove fluff from brooms in the following manner:—Drive two stakes into the ground, a few feet apart, and stretch a strip of netting tightly between them. Rub the brooms across this, and they will be freed from any fluff or cottons.

To harden small brushes, soak them in strong salty water—an excellent pick-me-up for soft toothbrushes and nailbrushes.

Hair brushes, too, benefit by salt, only in this case a teaspoon of iodised salt should be sprinkled on the bristles, left 24 hours, and then shaken off, and the bristles warmed. Always wash hairbrushes in ammonia and water, as rubbing with ordinary soap damages the bristles. Incidentally, care should be taken when packing hairbrushes, as it is then that the bristles are often broken and damaged by careless handling. A special celluloid guard slipped round the bristles will keep them in place, but strips of cardboard are a good substitute if no guards are available.

—"L. J. S.," Marton.



"... Only Skin Deep"

Nails Must Be Neat

YOU will remember that last month I was telling you how to keep your hands looking smooth and white. I just wonder how many of you have been persevering with what I told you to do? I know it is hard—so easy to forget that bottle of lotion after you have washed your hands, but I know that amongst you there are some who have faithfully carried out my directions, and it is to these that my advice goes this month. After all, there is no necessity for keeping your nails polished and shining if your hands are not dainty enough to set them off to good advantage.

The first golden rule about fingernails is never to cut them, but always file them. Be careful how you use your nail file—if your hands are long and slender, then taper your nails accordingly, but if your hands are squat and inclined to be dumpy, shall we say, then do not make the mistake of pointing your nails—file them to the shape of your fingertips.

What are the contents of your manicure box? I do hope you have it well supplied—you simply must have a good steel nail file, some emery boards, cottonwool, and an orange stick. Further, you will need nail polish, either liquid or powder, cuticle cream and remover, and plenty of warm, soapy water, with a small nailbrush. Set aside half an hour a week for your nails—they are worth it.

Start off by filing your nails, and then give them a soak and scrub in the warm soapy water. Now dry them carefully—not forgetting to massage your lotion into your hands!—and off we go.

Gently press back the cuticle with the cuticle remover—use your orange stick for this, with a little cottonwool wrapped round it. If you like nail white, apply this carefully, and then on to the polish. If you use the powder polish, you will need a good buffer and plenty of patience, but you will be well rewarded. However, if time is precious, a good liquid nail polish produces excellent results in a very short time. Make sure that you have removed all traces of old polish before applying the new, and apply it with gentle strokes downward from the moon to the tips. Never make the mistake of putting liquid polish over the moons on your nails—this is where your fingernails breathe.

After your polish is applied, sit down for quite five minutes and do nothing—you need every minute of this time for it to dry properly. Make very sure that the polish remover you use is a good oily one.

Sometime, just for a change, it is exhilarating to go really mad with nail polish—have a bright scarlet one, and see how well it looks on "occasions" when you are wearing your smart black frock. But a word of warning: if your good man dislikes bright-painted nails, don't on any account wear a conspicuous polish.

Two reminders about nails: always keep them neatly filed, and never let your polish peel off—your fingernails look very much better minus polish than minus **half** their polish!

Roses are red in this snow white gown from the wardrobe of the Columbia star, Joan Bennett. Soft crepe moulds to her figure, with accent on the pointed tunic, and shoulder drape gathered from the V neckline. Red roses are appliqued to make a border on the tunic, and a corsage cluster at the left shoulder.

Helpful Hannah Says . . .

Kerosene is an excellent remedy for curing cuts and skin abrasions. It also helps the duster to pick up dust instead of pushing it further on. Pour a little on the duster, add a little linseed oil, roll it up, and keep it in an air-tight tin when not in use.

* * *

To prevent the ragged edge that so often spoils the look of your poached egg, add a teaspoonful of vinegar to the water in which they are cooked.

* * *

Have you ever used the enamel tray that slides beneath the burners of your gas stove as a pastry board? We are not all lucky enough to have a marble slab for our pastry making activities, but you will find that the tray from your gas stove serves the purpose admirably.

* * *

If you have coconut matting on your floors, you will save yourself endless work if you place newspaper underneath it. The paper catches all the

International Wool Secretariat Fashion.

Sailcloth red tweed dungarees worn with a sky-blue wool skirt.

dirt as it goes through, and it is an easy matter to shake out your paper as well as your matting.

* * *

Put a small piece of lard or clean fat and 1 oz. of sugar in starch when mixing. Your clothes will be glossier, and the iron will not stick.

* * *

If you wash doeskin gloves in water in which the skin of an orange has been boiled, it will restore their natural colour.

* * *

Tell hubby to add a teaspoonful of peroxide to his shaving water. This will soften the whiskers, and make his shaving easier.

* * *

Don't mix your mustard fresh each time you need it. Mix a quantity, and after each using, fill the pot gently with water before putting away. When you need it again, carefully pour off the surplus water, and you will find your mustard fresh and ready for use again.

* * *

Now that violets are in again, here is a tip for keeping them fresh. Every night place them head downwards in a dish of water in which one aspirin tablet has been dissolved. Next morning dry them on a towel, and you will find that if you do this each night, they will last for quite two weeks.

While the Log Burns . . .

"Jurgen."

—By James Branch Cabell.

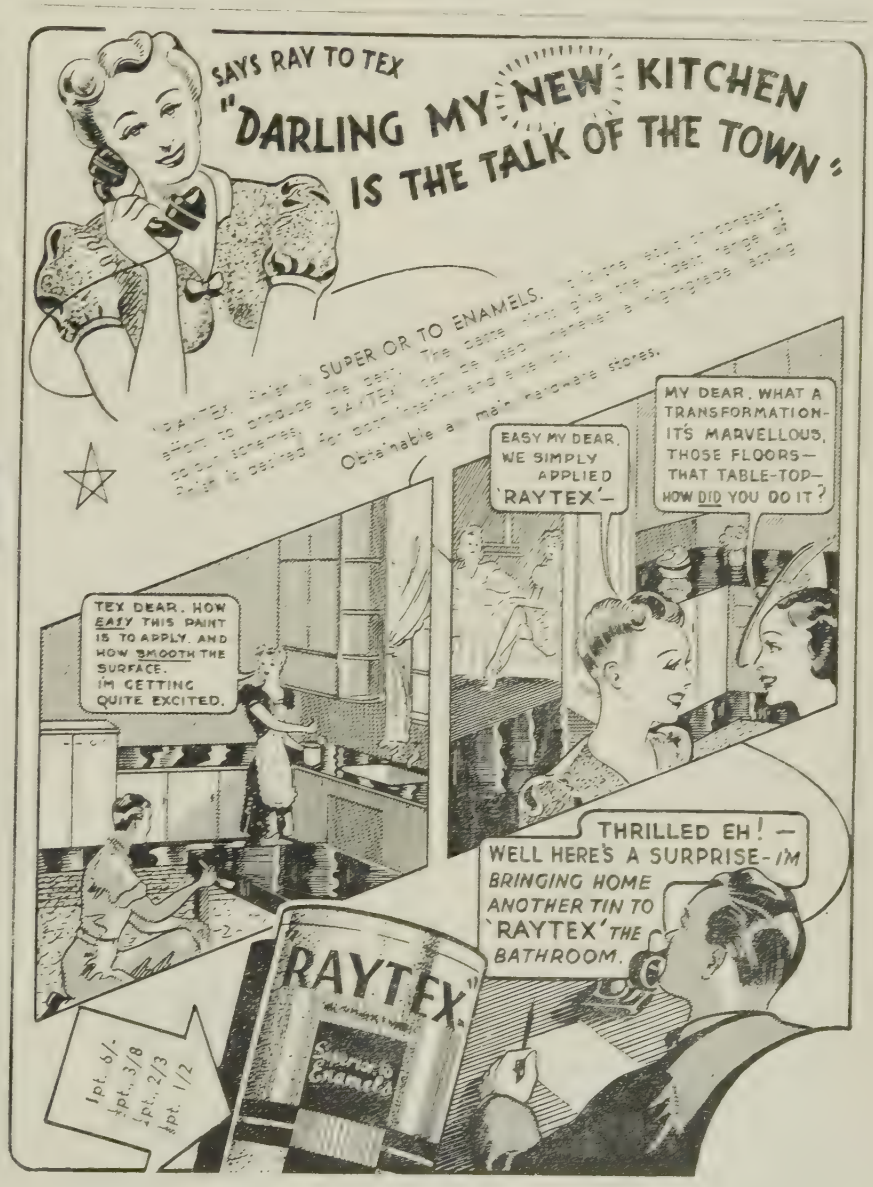
WHEN I read recently of the death of Sir Hugh Walpole, there flashed across my mind the book "Jurgen," by James Branch Cabell. I remembered that Sir Hugh Walpole had written the introduction to this book, and the stirrings of memory were so strong that I looked it up in my bookshelf, and with yesterday's pleasure read this fascinating story once again.

If you have not read "Jurgen" then there is indeed a pleasure in store for you. Sir Hugh Walpole thought that possibly this work would be immortal, and in his introduction he says, "I know of no book in the English language that colours one's imagination and fancy quite as this one does—some more, some less, but none other in quite this way. The world of Jurgen with its grotesquerie, its sudden beauty, its poverty and its pity, its adventure and its romance. . . ."

It is a fascinating, romantic adventure, fantastic and utterly unbelievable, and when it was first published it roused a storm of protest from those people who did not like it. With the passing of years, however, it has gradually fallen into its place as one of the finest and most original productions of American literature. The author, James Branch Cabell, has long been writing poems, essays, short stories, and novels, but outside his own country he was for many years unknown.

To tell you the story would be difficult, but indeed, who wants to know what a story is about before one reads it? Enough it is to say that it concerns a middle-aged pawnbroker, not of modern times, who is transported back to the glorious days of his youth, and from there on he wanders through a thousand fantastic adventures in a hundred different dream worlds. But were they all dreams, you will ask? Perhaps yes, perhaps no—I will leave that question for you to answer yourself after you have travelled through these worlds hand-in-hand with our hero, Jurgen, after you have marvelled with him at the beauties he found, after you have laughed with him over the many humorous and ridiculous situations that confronted him in his journeys. But I am sure you will agree with me that as a work of beauty and fancy, this book is unique.

Your country library may not house it on its shelves, but when you are near a bookshop you may be lucky enough to find a copy, as it is published in one of those popular cheap editions today, and I am sure you will wish to have it on your shelves as one of your own possessions.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"DARLING MY NEW KITCHEN IS THE TALK OF THE TOWN"
SUPER OR TO ENAMELS.
Obtainable at main ironmonger stores.
TEX DEAR, HOW EASY THIS PAINT IS TO APPLY, AND HOW SMOOTH THE SURFACE. I'M GETTING QUITE EXCITED.
EASY MY DEAR, WE SIMPLY APPLIED 'RAYTEX'—
MY DEAR, WHAT A TRANSFORMATION—IT'S MARVELLOUS, THOSE FLOORS—THAT TABLE-TOP—HOW DID YOU DO IT?
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RAYTEX
Enamels
1pt. 6/-
½pt. 3/8
¼pt. 2/3
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Our Competition

"ARE YOU A PERFECT WIFE"

PERHAPS your answer is yes, perhaps no—well, read what our writers have to say on the subject. Entries in this competition were most interesting—some were amusing, some were entertaining, but in all of them there were a lot of good points which could be heeded by all.

Most of you disagreed with the rules drawn up by the American Women's Club—so here are the rules drawn up by our New Zealanders.

First prize goes to "Poppy," Havelock North, second to "A Mere Man," and highly commended we have Mrs. Caskie, Spring Grove, "A.M.D.," Inglewood, and "Bluebell," Temuka. This is what they say:—

First Prize

1. Don't marry unless you want a family.

2. Love your husband as you love yourself.

3. Remember that an untidy wife is unsightly in the eyes of her husband, and an awful example to the neighbours.

4. When he remembers his mother's cooking, don't be angry—just smile in your heart. He is not really so bad when he remembers his mother.

5. Don't complain about your husband to other women.

6. Kiss and make up quarrels before going to bed; "hang-over fights" lead to the Divorce Court.

7. Let him think he is wise in everything, and let him have the last word.

8. When he suggests going places, don't say you have nothing to wear.

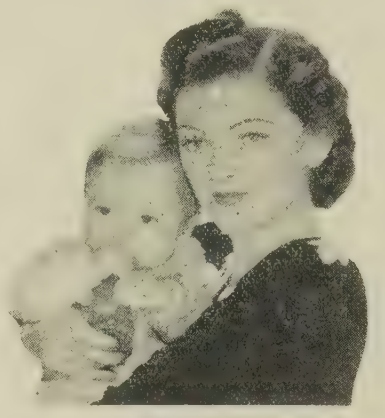
9. Attend to his buttons, and always have his socks mended.

10. Always be civil to his lady friend.

11. Don't complain immediately he gets in from work about the children and the ups and downs you have had during the day. After all, men are really babies, and the best way is to treat them as such.

—Poppy, Havelock North. (Please send me your address.)

THE PERFECT WIFE.



Perhaps Myrna Loy, Metro-Goldwyn-Mayer star, does not measure up to all the rules set out in this competition—or perhaps she does—but nevertheless she is popularly known as "The Screen's Perfect Wife."

Second Prize

1. A perfect wife should be well versed in cooking good square meals.

2. She should always see that there are plenty of dry bath towels, hot water, books, matches, and ash trays about in their respective places.

3. If there is a young family, she should see that they are bathed and in bed before her lord comes home for the evening. She should be neat and tidy herself, then there will be perfect peace, as in the early days of marriage.

4. She must not be over tidy as far as the house is concerned, and should always remember that an Englishman's home is his castle. She should not follow him about with broom and duster, confident he is made of dust, and to dust he will return.

5. She must not put the children before him in any way, but must remember that man is an eternal lover, and children have changed her, but not him. She should be broadminded enough not to be upset or jealous of him if he talks or goes out occasionally with a lady friend of the family.

6. She must be thrifty.

7. Even if she goes without mats for the house, or new curtains for the lounge, she should see that her husband faces the public in a respectable hat and suit.

8. Lastly, a perfect wife will try and remain a pal, not a dictatorial housekeeper, if she wishes to hold her husband.

—A Mere Man, Te Awamutu.

Highly Commended

A perfect wife should be:—

1. A real friend, and truly share her husband's joys or sorrows.

2. An opponent worthy of his mental steel, that is, be able to discuss intelligently current events, business, sport, or hobbies. Read up subjects about which she is hazy—on the quiet.

3. A partner for all holiday moods, ready at once to go out with her husband if and when he wishes.

4. A tactful manager. Put the running of the house into the background. Make it a pleasant social place in the evenings, but one where her husband feels quite free to assist if he wishes.

5. A good business woman. Budget all household expenditure, and keep within the limits of the budget.

6. A proud housewife. Consider her job as important as her husband's, and worth the same amount of thought and care.

7. Attractive, and dress as becomingly as his purse allows. Don't expect him to rave over every new dress. Quiet, sincere approval of your general style is all that is necessary.

8. Fair-minded. Share the children's affections, even if it means putting herself in the background a little. So many wives try to make mother come first. Children should love each parent equally.

To sum up: The words "modern housewife" imply that a woman should

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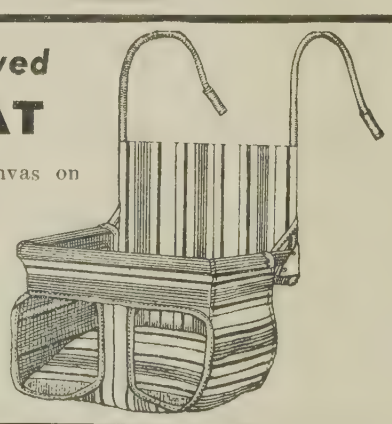

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be an economist, a doctor, a lawyer, an interior decorator, a cook, a child psychologist, a dressmaker, and something of a home philosopher.

—Mrs. Caskie, Spring Grove.

1. Don't try to "wear the trousers," and don't be bossy.

2. Don't nag.

3. Don't sit down to breakfast in curling pins and dressing gown.

4. Take an interest in his work, but don't overdo it.

5. Don't belong to too many committees.

6. Be healthy.

7. Don't shirk motherhood.

8. Fuss over your husband sometimes, and let him think you are still in love with him (whether you are or not).

9. Above all, remember the old, old saying, "An ounce of honey is better than a gallon of vinegar."

—A.M.D., Inglewood.

1. Be punctual with meals, so as not to keep your man waiting.

2. Be a careful wife in the managing of the household purse.

What Is Your Secret Desire?

WE all have a secret desire—some of us hope that we may some day travel, or become famous; perhaps we hope to marry, and have a home and children—what is your desire?

"WHAT DO YOU DESIRE OF LIFE?"

Perhaps our desires are only dreams, never to be realised, and yet I have known strange cases of dreams coming true quite unexpectedly. Will you tell me what is your secret desire? We would like to share it.

Two prizes for you: First 10/-, second 5/-. Send your replies before September 20th, to—

"Mary"

C/o "Journal of Agriculture."
P.O. Box 3004, Wellington.
Closing date: 20th September, 1941.

3. Be bright and cheerful when hubby comes in instead of telling him all the troubles of the day.

4. Confide and share all things with your husband.

5. See that his mending is attended to promptly.

6. Don't wait on him hand and foot; get him to give you a hand now and again.

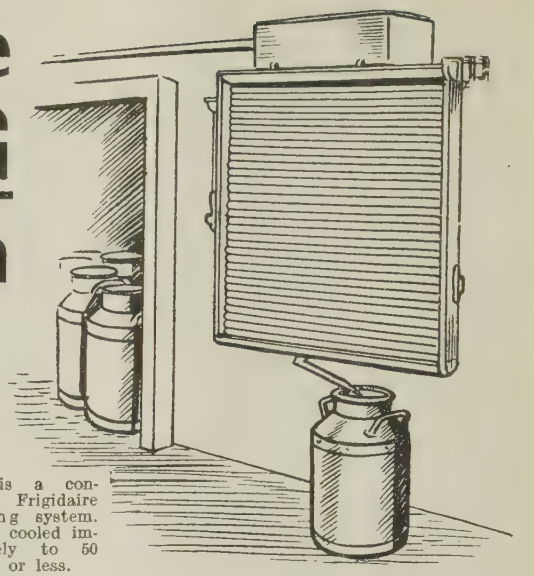
7. Let him have a flutter, and go out on his own occasionally; you appreciate one another more, after.

8. Be a loving and thoughtful wife, and you will be treated the same.

—Bluebell, Temuka.

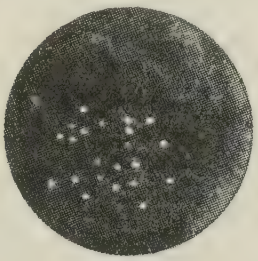
A PERFECT wife should seek her husband's advice when selecting her clothes. If she dresses entirely to her own fancies and ideas, he may privately think her a freak and avoid as far as possible being seen in her company. If he prefers to keep his business affairs to himself, then let him. He did not choose his relatives, and cannot answer for them; therefore be charitable in your criticisms. Do not dwell on your aches and pains, real or imaginary. The habit may become chronic, and, after all, the man of your choice may have more to endure than you dream of, yet hides it with a smile. Be sweet.—**Unhappy Jack, Gisborne.**

Bank £50 to £150 more each year by COOLING your Milk or Cream

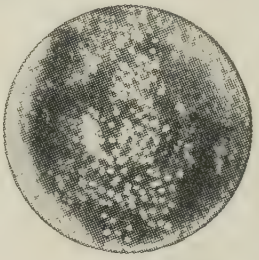


Here is a convenient Frigidaire Cooling system. Milk is cooled immediately to 50 deg. F. or less.

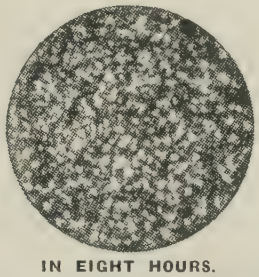
The microscope proves that DAIRY PROFITS depend on EFFICIENT COOLING.



THE START.



IN TWO HOURS.



IN EIGHT HOURS.

As you know, milk or cream must be reasonably free of bacteria to obtain high grading. Here is where Frigidaire helps you. These illustrations are actual photographs showing how bacteria multiply when milk is not properly cooled. At 68 deg. F. (water cooled) the bacteria count increases from 10 to 3,576,900 in 48 hours. At 50 deg. F. (Frigidaire cooled) the increase is only from 10 to 62 in the same time.

THIS year, Frigidaire has turned its attention to the problems of the New Zealand dairy farmer. To-day, as a result of research and experiment on farms, and in dairy and cheese factories everywhere in the Dominion, Frigidaire can now offer a cooling system **to meet the demands of any sized herd.**

Each and every unit combines amazing operating economy with the traditional Frigidaire dependability —and all units can be installed speedily and economically. If you want to make more profit this year. **and** in years to come, look to your cooling system NOW! Frigidaire is designed to increase your annual milk or cream cheque by increasing your grading and keeping it **always** at "Finest."

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Please forward me full particulars, including price and instalment costs, of a Frigidaire cooling system suitable for my particular requirements.

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Menu Competition

THERE were many entries in this competition, and it was indeed interesting to see how many economical housewives there are amongst my "Good Neighbours." First prize goes to "Lady Jane," Wellington, for her menu. and second prize to Mrs. F. Seifert, Morrinsville, Waikato.

First Prize

Soup: Mutton broth.
Meat: Casseroled mutton and dumplings.
Vegetables: Carrots, onions, potatoes.
Sweet: Boiled rice pudding.

Cost.

1 flap mutton (weight about 1½lb.)	6d
Carrots and onions	4d.
1½ lb. potatoes	2½d.
4 oz. rice	1d.
Milk	2½d.
2 oz. sugar	½d.
½ lb. flour	1d.
Baking powder	½d.
Total	1/6d.

Method.—Cut the mutton into strips. Add about 2 pints of water. Salt and pepper generously. Add carrots and onions. Simmer, not boil, until meat is tender. Put away till next day, then skim fat from gravy, which forms the soup course.

Put in a bowl the flour and baking powder, with a pinch of salt, and fat from gravy, and water to make a fairly dry dough. Form into balls and roll in flour. Put meat into casserole or saucepan with a little of the gravy. Add dumplings and vegetables, and carefully reheat until dumplings are cooked. Soup is heated in a separate saucepan.

Cook the rice in boiling salted water until tender. Drain, keep hot, and serve with a third of the milk with each helping, and sugar to taste.

—"Lady Jane," Wellington.

Second Prize

Soup: Vegetable.
Meat: Fried beef sausages.
Vegetables: Mashed potatoes, mashed swedes.
Sweets: Steamed ginger pudding.

Cost.

½ lb. gravy beef	3d.
1 lb. beef sausages	6d.
1 onion and 1 carrot	2d.
8 oz. flour	1½d.
Swedes	3d.
Potatoes	3d.
2 oz. sugar	½d.
2 oz. butter	2d.
1 teaspoon ginger, 1 teaspoon carb. soda	1d.
Milk to mix.	
Total	1/10d.

Method.—Put gravy beef on with 3 cups of stock or vegetable water, add salt and pepper, and when cooked remove meat and thicken soup.

Fry sausages, pour off all but 1 tablespoon fat, add 1 tablespoon flour, brown, then add water from vegetables. Mash potatoes and swedes.

Melt butter and sugar, add flour and ginger. Then add sugar and soda dissolved in milk. Steam for 2 hours.

—Mrs. F. Seifert, Morrinsville.

Soup: Mutton broth.
Meat: Steak and kidney stew.
Vegetables: Mashed swedes and potatoes.
Sweets: Bread and apple pudding.

Cost.—3 shin bones (mutton), 6d.; kidney, 2d.; potatoes, 3d.; 1 onion and 3 carrots, 2d.; 1 swede, 2d.; apples, 4d.; sugar, 1 tablespoon barley, 2 slices of bread and seasonings, 2d.; total, 1/9.

Method.—Cut meat clean from bones, add water, and simmer bones with barley, 1½ hours. Add 2 carrots, ½ onion, piece of grated swede, and seasonings. Cook for another hour. Cut meat and kidney into dices, cover with water, add carrot and rest of onion, and simmer 1½ hours. Cook swede and potatoes, mash both before serving, and thicken stew. Slice apples into pie-dish, cover with bread and butter cut into squares, bake in moderate oven for ½ to ¾ hour.—**"Bluebell," Temuka.**

Uses for Quarters

I SHOULD have headed this: "Uses for Fore-quarters," because one of my good neighbours has suggested that she would like to have ways of using a quarter of mutton to get the best variety of meals. No doubt there are many among you who are experts at varying the uses for fore-quarters, so send your uses to the "Mixing Bowl" before September 15, please.

The usual prize of 2/6 will be awarded to the most tempting variety of uses.

Soup: Celery soup.
Meat: Belgian roll.
Vegetables: Danish salad.
Sweets: Baked apples.

Cost.—½ lb. sliced Belgian roll, 4d.; carrots, spring onions, and parsley, 4d.; small head celery and 2 cooked beet, 5d.; 1 lb. apples, 2d.; 3 teaspoons apple jelly, 1d.; ¾ pint milk, 2d.; cream, 3d.; 1½ oz. flour, vinegar, 1 tablespoon, 1½ teaspoons sugar, 1½d.; 3 or 4 potatoes, 1½d.; total, 2/-.

Method.—Cut up the spring onions finely, keeping back two for salad. Dice 1 carrot, and the outside leaves and stalks of celery, add 2 cups of water, and boil up. Now add ¾ pint of milk and 1 tablespoon flour, which has been mixed with 2 tablespoons water, and a dash of pepper. Boil up again,

and add 1 sprig parsley finely chopped, and salt to taste. Serve very hot. To make Danish salad, place the meat on large flat dish. Grate the carrots and 1 apple, place in mounds around the meat. Chop very finely the celery and beet, also two spring onions. Keep each vegetable separate, and arrange in a circle around the dish. Now garnish with a little chopped parsley. Serve with cream dressing, and potatoes which have been baked in their jackets. To make the cream dressing, take 3 tablespoons of cream, add 1½ teaspoons of sugar, and 1 tablespoon of vinegar, and 1 tablespoon of cold water. Beat all together, and serve with salad. Core the apples, and bake until tender. Serve with 1 teaspoon of apple jelly on top of each.—**"Dagmar," Otago.**

Soup: Vegetable.
Meat: Casserole of rabbit.
Vegetables: Potatoes and swedes.
Sweet: Steamed apple pudding.

Cost.—1 carrot, 1 onion, 1 potato, 3d.; 1 cup milk, 1 stick celery, 1½d.; 1 rabbit, 8d.; 1 lb. potatoes, 1 lb. swedes, 3½d.; 1 lb. apples, 2d.; 1 egg, 2d.; ½ cup flour, ½d.; 1 cup milk, 1d.; ½ lb. sugar, 1d.; total, 1/10½.

Method.—Grate together the carrot, onion, potato, 1 stick of celery, and cook with vegetable water, and milk. Cook the rabbit in casserole, with sliced onion, and serve potatoes and swedes mashed. Cut up apples, and put into basin. Make batter of the other ingredients, pour over apples, and steam for 2 hours.—**M. C. A. B., Hook.**

Soup: Vegetable soup with wholemeal dumplings.
Meat: Brazilian stew.
Vegetables: Baked potatoes.
Sweets: Baked apples and junket.

Cost.—Piece of shin of beef, 6d.; bunch of carrots, 2d; bunch parsnips, 2d.; 1 onion, 1 leek, 2d.; about 2 lb. potatoes, 2d.; 1 dessertspoon sago, 1 tablespoon pearl barley, 1 teaspoon baking powder, salt and pepper, junket powder, 2 teaspoons butter, 1 teaspoon sugar, 1 dessertspoon vinegar, 2d.; 3 apples, 1d.; ½ lb. of flour and wholemeal, 1d.; 1 pint of milk, 2d.; total, 1/8.

Method.—Cut meat in slices, dip in vinegar, and place in basin with tight-fitting lid. Scrape carrots and parsnips, cut into small pieces, place in dish with meat, add onion, salt and pepper, and dessertspoon sago (to thicken gravy). Place lid on firmly, and cook in hot oven for 2½ hours. Will make own gravy without any added water. Keep out 1 piece each of carrot and parsnip to put into soup. Cut up small with leek, add to bones; cover with water, add pepper and salt, and barley. Boil slowly, and 15 minutes before serving add dumplings made from flour, wheatmeal, baking powder, 1 teaspoon melted butter, with just sufficient milk and water to make into a stiff dough. Drop in spoonfuls into boiling soup, and boil fast for 15 minutes. 1 tablespoon chopped parsley added when ready to serve is an improvement. Potatoes should be scrubbed and baked in their jackets for 45 minutes. Core apples, place in dish with small dab of butter, and sprinkle of sugar, and bake about ½ hour. Make junket, and set aside to cool.—**"Mary Ann," Bell Block.**

Soup: Milk soup.
Meat: Stuffed cabbage.
Vegetables: Potatoes and onions.
Sweet: Porcupine apples.

Cost.—1 small cabbage, 4d.; ¾ lb. sausages, 6d; potatoes and 1 onion, 4d; milk, 1 pint, 3d.; apples, 2 lb., 4d; sugar, ¼ lb., 1d.; total, 1/10.

Method.—Mash two of the potatoes and the onion. Mix 1 oz. cornflour with ½ pint of cabbage water. Boil for three minutes. Add milk and vegetables. Season and reheat. Scoop out the centre of the cabbage. Make stuffing of sausages and chopped cabbage. Refill and replace stalk. Place upright in deep casserole with potatoes and onion. Nearly cover with water, and simmer until tender. Make a brown gravy from cabbage water. Boil the sugar and 1¼ cups of water. Add apples peeled and cored. Cook gently until tender, but not broken. Take out apples. To syrup add 1 teaspoonful butter, and 1 teaspoon cinnamon. Boil, pour over apples. Stick with blanched almonds (i.e., skinned, cut lengthwise, and browned in oven).—**Mrs. E. G. Stewart, Wellington.**

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The *Journal* is issued monthly. The subscription within New Zealand, which is payable in advance and includes postage, is 2s. 6d. a year. The overseas subscription is 5s. Subscriptions should be forwarded or paid direct to any office of the Department of Agriculture in the Dominion. Single copies, price 6d., are available from the Department of Agriculture, Box 3004, Wellington.

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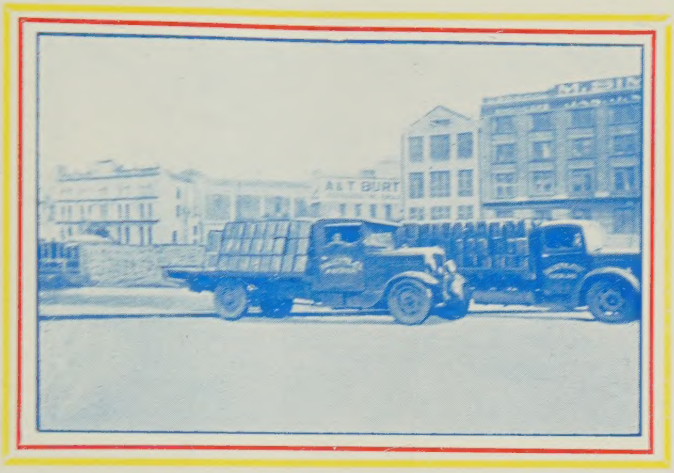

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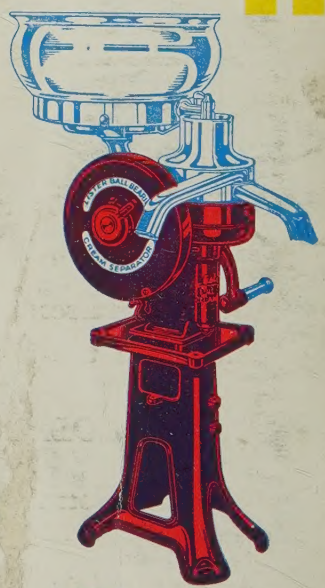

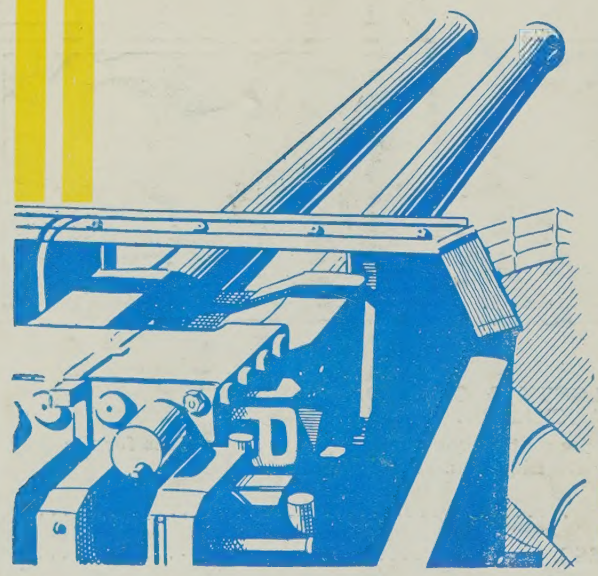

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